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SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
Bulletin 99

EAST AFRICAN MAMMALS IN THE UNITED STATES NATIONAL MUSEUM

PART II. RODENTIA, LAGOMORPHA, AND TUBULIDENTATA

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WASHINGTON
GOVERNMENT PRINTING OFFICE
1919

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EAST AFRICAN MAMMALS IN THE UNITED STATES NATIONAL MUSEUM.

PART II. RODENTIA, LAGOMORPHA, AND TUBULIDENTATA.

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Superintendent, National Zoological Park, Washington.

INTRODUCTION.

The first part of this work, published August 16, 1918, dealt with the mammals of the orders Insectivora, Chiroptera, and Carnivora contained in the East African collections of the United States National Museum. This second part consists of reports on the specimens belonging to the Orders Rodentia (rodents), Lagomorpha (hares and their allies), and Tubulidentata (aard-varks). It is hoped that a third part, containing reports on the primates and ungulates, may complete the series.

The plan of arrangement of the text adopted in the first part has been followed throughout, and the geographical limits are the same. All specimens of mammals from Eritrea, Somaliland, Sudan, Abyssinia, Lado Enclave, Uganda, British East Africa, and German East Africa, including Zanzibar, contained in the collection have been critically examined and listed. The territory included in the report is shown in figure 1.

As with the groups treated in the earlier part, the great bulk of the material listed was collected by the Smithsonian African Expedition under the direction of Col. Theodore Roosevelt, 1909–10; and by the Paul J. Rainey African Expedition, 1911–12. A few specimens, some of special importance, have been received from miscellaneous sources as noted in the summary below.

SUMMARY OF SPECIMENS LISTED IN PART 2.

The mammals of the orders Rodentia, Lagomorpha, and Tubulidentata, listed in these pages, were received by the museum from expeditions and collectors as follows:

	Rodentia.	Lagomorpha.	Tubulidentata.	Totals.
Smithsonian African Expedition under the direction of Col. Theodore Roosevelt:				
Col. Theodore Roosevelt	8			8
Kermit Roosevelt	4			4
Lieut. Col. Edgar A. Mearns, U. S. A	335	14		349
Edmund Heller	244	5		249
J. Alden Loring	2,112	23		2,135
R. J. Cuninghame	2			2
Paul J. Rainey African Expedition:				
Edmund Heller	1,979	14		1,993
A. J. Klein	2			2
A. B. Percival	19			19
H. J. A. Turner	2			2
Dr. W. L. Abbott	43	2		45
A. B. Percival	16			16
Hon. N. Charles Rothschild	9	2		11
H. J. A. Turner	9			9
W. F. H. Rosenberg (received from)	2	2		4
G. H. Goldfinch	2			2
W. G. Doggett	2			2
R. E. Dent	2			2
William Astor Chanler and Lieut. Ludwig von Höhnel	2			2
William Astor Chanler	1			1
Hon. Hoffman Philip			1	1
Capt. V. Bottego	1			1
D. Carruthers	1			1
Dr. V. Ragazzi	1			1
G. Denhardt	1			1
W. Schlüter (received from)	1			1
	4,800	62	1	4,863

SUMMARY.

From Smithsonian African Expedition	2,747
From Paul J. Rainey Expedition	2,016
From miscellaneous sources	100
Total rodents, lagomorphs, and tubulidentates in the United States National Museum East African collection	4,863

There are included in the East African collections of these groups 75 type-specimens of rodents and 3 type-specimens of lagomorphs. Of the 78 new forms 1 was described by Gerrit S. Miller, jr., 5 by Dr. F. W. True, 8 by N. Hollister, and 64 by Edmund Heller.

Of these 78 described forms, 71 are recognized as valid species or subspecies in the present paper.

In the previous part there were listed 1,833 insectivores, bats, and carnivores. This makes a total of 6,696 specimens of mammals, of 349 species and subspecies, belonging to the six orders dealt with to date in this report on the East African collections, including 142 type-specimens.

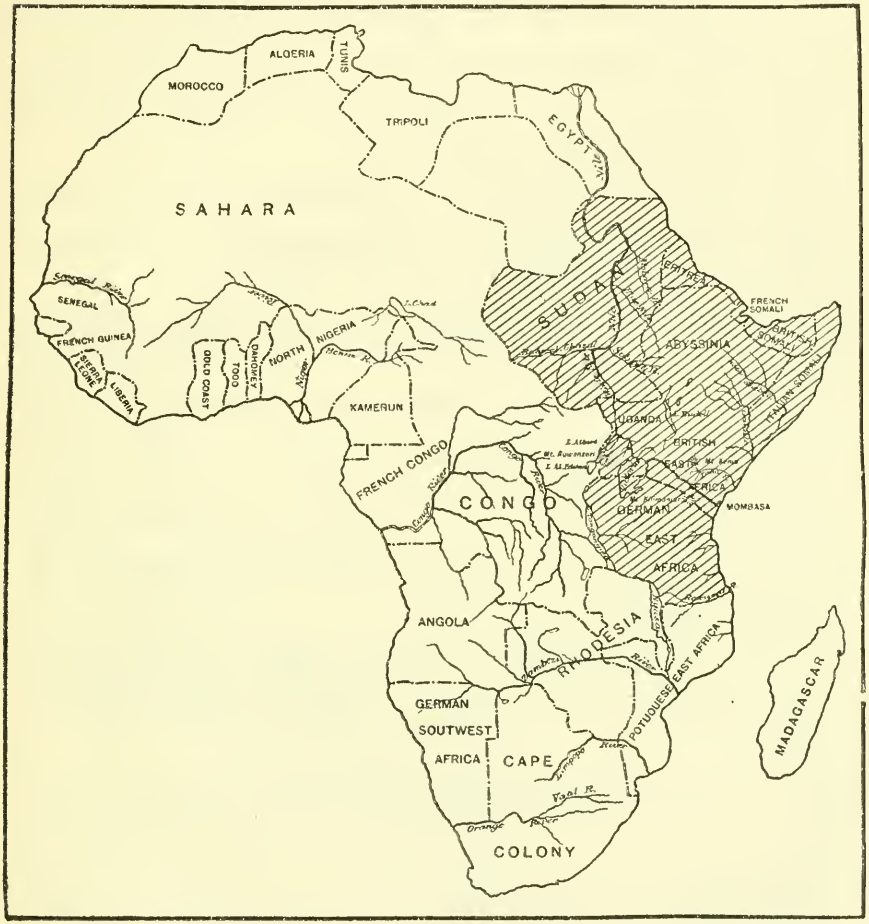

FIG. 1.—MAP OF AFRICA WITH SHADED AREA SHOWING THE REGION COVERED BY THIS REPORT.

LIST OF LOCALITIES.

A list of all the localities from which National Museum specimens of mammals of the orders Rodentia, Lagomorpha, and Tubulidentata are mentioned in this report is given below, with index references to the accompanying map, reproduced from Part I. As explained in the introduction to the first part, maps of this region do not agree in essential details and it has been impossible to determine some of the localities with precision; but there has rarely been any doubt

about the approximate location of a given place and the variations can be only of a comparatively few miles at the most.

ABERDARE MOUNTAINS—A range of mountains about half way between Lake Naivasha and Mount Kenia. Summits said to be 11,000–12,000 feet. J 4.

ADIS ABABA—Capital city of Abyssinia, situated near the geographical center of that country. Also written Addis Ababa and Addis Abeba. F 5.

AGORDAT—In central Eritrea, near the southern bank of the big bend of the Barca River. C–D 4–5.

ANKOLE—District in extreme southwestern Uganda just east of Albert Edward Nyanza. J 2.

ARCHER'S POST—On the Northern Guaso Nyiro near the mouth of the Lakiundu River, north of Mount Kenia. I 5.

ATHI PLAINS—North and east of Nairobi. J 4.

ATHI STATION—On the Uganda railway, 16 miles southeast of Nairobi. It is also called Athi River. Altitude 4,950 feet. J 4.

BARGUNETT RIVER. or BURGUNETT RIVER—A southern tributary of the Northern Guaso Nyiro, near the Meru Road, west of Mount Kenia. J 4.

BURUMBA—In Ankole, southwestern Uganda. J 2.

BUTIABA—On the northeast shore of Albert Nyanza in Unyoro, Uganda. I 2.

CHANGAMWE—Station on the railroad 6 miles inland from Mombasa. Altitude 180 feet. K 5.

CHANGONGORRA—On the east side of the Aberdare Range 9 miles from Nyeri; also called Kongorra. J 4.

CHANLER FALLS—On the Northern Guaso Nyiro River north of the Jambeni Mountains and east of Archer's Post. I 5.

DEEP DALE—Between the Engare Narok River and Suswa Plain, southwestern British East Africa. J 4.

ELDOMA RAVINE—Just north of the Equator and north from the railroad station of Londiana, British East Africa; the Eldoma River flows into the Molo, which empties into Lake Baringo. I–J 4.

ENGARE NAROK RIVER—A tributary of the Southern Guaso Nyiro. On the west side of the Mau Escarpment midway between the Uganda railroad and the border of German East Africa. Also writtern Engarro Naroke, or N'garri Narok. J 4.

ENGARE NDARE RIVER—A southern tributary of the Northern Guaso Nyiro, north of Mount Kenia. I 4.

FORT HALL—About midway between Nairobi and Mount Kenia. J 4.

GONDOKORO—On the east bank of the Bahr el Jebel in extreme northwestern Uganda. H 2.

GUAS NGISHU BOMA—At the eastern edge of the Guas Ngishu Plateau near the Elgeyo Escarpment and north of Ravine Station. I 4.

GUAS NGISHU PLATEAU.—South and east of Mount Elgon, west of the Elgeyo Escarpment, and north of the Nandi Hills. Drained by the upper waters of the Nzoia River. I 3–4.

HOIMA, or FORT HOIMA—In Unyora, western Uganda, not far from the eastern shore of Albert Nyanza. I 2.

ISIOLA RIVER—A southern affluent of the Northern Guaso Nyiro north of Mount Kenia, and west from the Lakiundu River. I 4–5.

JAMBENI MOUNTAINS—Northeast of Mount Kenia about half way to the Northern Guaso Nyiro River. I 5.

JUJA FARM—W. N. McMillan's place on the Athi Plains, about 23 miles northeast of Nairobi. J 4.

KABALOLOT HILL—In the Sotik, west of Loita Plains and near the border of German East Africa. Headwaters of the Amala River. J 3–4.

MAP OF EASTERN EQUATORIAL AFRICA.

FOR EXPLANATION OF PLATE SEE PAGE 3.

KABULA MULIRO—On the road about midway between Kampala and Hoima, Uganda; between Albert Nyanza and Victoria Nyanza. I 2.

KAHE—About 45 miles southeast of Mount Kilimanjaro, in German East Africa, east of the Pangani River. K 4–5.

KAIMOSI—On the Lukosa River just north of the Equator and north of Port Florence, the western terminus of the railway in Kavirondo. I 3.

KAJUIA—Near the east shore of Albert Nyanza, south of Butiaba in Unyoro. I 2.

KAKUMEGA—Just north of the Equator near Port Florence, the end of the railway in Kavirondo, Kisumu Province, northeast of Victoria Nyanza. I 3.

KAMITI FARM—Ranch owned by H. H. Heatley on the Athi Plains. J 4.

KAMPALA—Fort Kampala, or Mengo, just north of Entebbe, Uganda, and near the northwestern edge of Victoria Nyanza. I 2.

KAPITI, or KAPITI PLAINS—A station, also called Kapiti Station, on the railway 29 miles southeast of Nairobi and 288 miles from Mombasa. Altitude, 5,350 feet. J 4.

KARA WATER, or KARA RIVER—On the Marsabit Road north of Mount Lololokwi. I 5.

KENYA WATER—On the Marsabit Road north of the Northern Guaso Nyiro toward Mount Marsabit. I 5.

KERMA—On the eastern bank of the Nile in northwestern Sudan. B 1–2.

KHARTOUM—On the White Nile in Sudan. D 2.

KIAMBU—In Kikuyu, British East Africa, north of Nairobi and near the western edge of the Athi Plains. J 4.

KIBABE—In the Nandi Hills, Kisumu Province, British East Africa, just north of the Equator and northeast from Victoria Nyanza. I 3.

KIJABE—A station on the Uganda railway in British East Africa between Nairobi and Lake Naivasha. Altitude, 6,790 feet. J 4.

KIKANDA—See Kikonda. I 2.

KIKANDWA—About 20 miles northwest from Kampala, north of Victoria Nyanza, Uganda. I 2.

KIKONDA—About 25 miles southeast of Hoima, Unyoro, Uganda. I 2.

KIKUYU—A station on the railway between Nairobi and Kijabe, in Kikuyu, British East Africa. J 4.

KILIMANJARO—See Mount Kilimanjaro. K 4.

KISIMBIRI—North of Kampala and Entebbe, near the northwest corner of Victoria Nyanza, Uganda. Sometimes written Kisimbili. I 2.

KISINGO—About midway between Kampala and Hoima, Uganda. I 2.

KISUMU—A village on Ugowe Bay, northeastern shore of Victoria Nyanza and near Port Florence. Also a province of western British East Africa bordering on Victoria Nyanza. J 3.

KITANGA—Sir Alfred Pease's farm in the Mwa Hills on the Athi Plains, near Nairobi and Athi Station. J 4.

KONGORRA—See Changongorra. J 4.

KURSEINE—On the Northern Guaso Nyiro above the mouth of the Guaso Narok. I 4.

KYAMBU—See Kiambu. J 4.

LAGOS—Near Ledgus, on the east side of the Bahr el Jebel, between Gondokoro and Nimule, northwestern Uganda. H 2–3.

LAIKIPIA—On the western edge of the Laikipia Plateau southeast of Lake Baringo. I 4.

LAIKIPIA PLATEAU—Northwest from Mount Kenia and north of the Aberdare Mountains. I 4.

LAKE NAIVASHA—A lake and station on the railway across British East Africa, 391 miles from Mombasa and almost 200 miles from Port Florence. The altitude of the railway station is given as 6,230 feet. J 4.

Lakiundu River—Rises in the Jambeni Mountains, northeast of Mount Kenia, and flows west and north into the Northern Guaso Nyiro at Archer's Post. I 5.

Ledgus—On the east bank of the Bahr el Jebel, between Gondokoro and Nimule, northwestern Uganda. H 2–3.

Lesiweru River—One of the numerous small streams flowing northwest from Mount Kenia and crossed by the Meru road. I 4.

Let Marefia—Northeast from Adis Ababa, Abyssinia. F 5.

Lialo—Northwest from Kisingo, about midway between Kampala and Hoima, Uganda. I 2.

Lime Springs—Near the eastern edge of the Loita Plains, not far from the Southern Guaso Nyiro River. J 4.

Loita Plains—Near the German East African border in southwestern British East Africa, west of the Rift Valley and the Southern Guaso Nyiro River. J 4.

Lombeki River—Eastern tributary of the Bahr el Jebel between Uma village and Nimule, Uganda. H 2.

Londiana—Station on the Uganda Railway in western British East Africa between Nakuro and Port Florence; 500 miles from Mombasa and 84 miles from Port Florence. Altitude, 7,410 feet. I–J 3–4.

Longaya Water—On the Marsabit Road north of Mount Lololokwi. Also written Lungaya. I 5.

Lorian Swamp—About 160 miles northeast of Mount Kenia. Shown on maps as the eastern limit of the Northern Guaso Nyiro River. I 5.

Loroghi Mountains—About midway between Mount Kenia and the southern end of Lake Rudolf. I 4.

Lugh—On the Ganale River in western Italian Somaliland, near the boundary line between Abyssinia and British East Africa. H 6.

Lukenia Hills—See Ulukenia Hills. J 4.

Lukosa River—South of the Nzoia River on Guas Ngishu Plateau, flowing into Victoria Nyanza. Also called Lukos River and Yala River. I 3.

Machorra—In the Taita Hills. Sometimes written Macharra. K 5.

Maji-ya-chumvi—A station on the railroad 35 miles from Mombasa; altitude, 570 feet. K 5.

Marangu—On the southeastern side of Mount Kilimanjaro in German East Africa, near the boundary line of British East Africa. K 4.

Mariakani—A station on the railroad 26 miles from Mombasa. K 5.

Marsabit Lake—At Mount Marsabit, north of the Northern Guaso Nyiro. I 5.

Marsabit Road—The route to Mount Marsabit, north of the Northern Guaso Nyiro. I 5.

Mayo River—Rises in the Aberdare Mountains and flows into the Nyuki River, one of the affluent streams of the Northern Guaso Nyiro. J 4.

Mazeras—Station on the railroad 16 miles from Mombasa; altitude 530 feet. K 5.

Merelle River, or Merelle Water—On the Marsabit Road about midway between the Northern Guaso Nyiro River and Mount Marsabit. Sometimes written Merele. I 5.

Merowe—On the Nile in north central Sudan between Ambukol and Salmia. B–C 2.

Meru, or Meru Boma—Just north of Mount Kenia. I–J 4–5.

Meru Road—Across the Laikipia Plateau to Meru, north of Kenia. I–J 4.

Mission—The Friends Industrial Mission at Kaimosi, Kisumu, Kavirondo. I 3.

Mnyouri Jardin—On the east bank of the Bahr el Jebel, between Gondokoro and Nimule, and just south of Ledgus, northwest Uganda. H 2.

Mobuku Valley—Southeast side of Mount Ruwenzori, between Albert Nyanza and Albert Edward Nyanza, western Uganda. I 1–2.

Mount Gargues—In the Mathews Range, north of Mount Kenia and southeast of Lake Rudolf. Summit said to be 8,800 feet altitude. Also written Mount Uarages I 4–5.

Mount Kenia—A high peak in central British East Africa, almost directly on the Equator. Altitude given on recent maps from 17,200 feet to 18,620 feet. Timber line is about 13,000 feet. I–J 4–5.

Mount Kilimanjaro—A mountain on the border between British East Africa and German East Africa, about 175 miles from the coast. Altitude 19,780 feet. K 4.

Mount Lololokwi—An isolated mountain east of the Mathews Range, about midway between Mount Kenia and Mount Marsabit, British East Africa. I 4–5.

Mount Marsabit—In northern British East Africa, about 170 miles north of Mount Kenia. I 5.

Mount Mbololo—In the Taita Hills, about midway between Kilimanjaro and the coast. Summit 4,400 feet. Sometimes written Mbululu, or Umbololo. K 5.

Mount Nyiro—A short distance south of Lake Rudolf and northeast of Lake Sugota. I 4.

Mount Sagalla—In the southern Taita Hills, about midway in a line between Kilimanjaro and Mombasa. K 5.

Mount Uaragess—See Mount Gargues. I 4–5.

Mount Umengo—In the Taita Hills, west of Ndi, and between Taveta and the railway, British East Africa. K 5.

Mtoto Andei—A station on the railway 165 miles inland from the coast and about midway between Mombasa and Nairobi. Altitude 2,500 feet. K 5.

Mubuku Valley—See Mobuku Valley. I 1–2.

Naikhala—On the east bank of the Atbara River a short distance above Atbara Station where it empties into the Nile, north central Sudan. C 3.

Nairobi—Capital of Ukamba Province, British East Africa, 327 miles from Mombasa and about 260 miles from Port Florence by rail. Altitude, 5,450 feet. J 4.

Naivasha—A station on the Uganda railway near Lake Naivasha. Altitude, 6,230 feet. J 4.

Naivasha Escarpment—The forested escarpment east and northeast of Lake Naivasha, between the railroad and the true Naivasha Plains. J 4.

Naivasha Plains—West, northwest, and northeast of Lake Naivasha; particularly the plains between the Naivasha Escarpment and the Aberdare Mountains. J 4.

Naivasha Station—See Naivasha and Lake Naivasha. J 4.

Nakheila—Same as Naikhala. C 3.

Nakuru, or Nakuro—Station and lake on the railroad in British East Africa, about 55 miles west of Naivasha. The altitude of the station is 5,950 feet. J 4.

Narosurra River—Flows from the Loita Plains into the Southern Guaso Nyiro. Also called Narossera. J 4.

Ndi—In the Taita Hills, between Taveta and the railroad. K 5.

Neuman's Boma—On the north bank of the Northern Guaso Nyiro River nearly opposite the mouth of the Isiola. Also called Neuman's Camp. Almost directly north from Mount Kenia, about 60 miles. I 4–5.

Ngare Ndare River—See Engare Ndare River. I 4.

Ngare Nyuki or Nyuki River—One of the headwaters of the Northern Guaso Nyiro, northwest of Mount Kenia. Sometimes written Nyuku. I 4.

Nimule—On the east bank of the Bahr el Jebel, about midway between Albert Nyanza and the Sudan border, in northwestern Uganda. H 2.

Njoro O Nyiro River—West side of the Mau Escarpment, about 35 miles southwest of Lake Naivasha. Sometimes given as Oljoro O Nyon River. J 4.

Njoro Osolali, or Njoro O Solali—In the Sotik, southwestern British East Africa. J 4.

Nkyanuna—A few miles northwest from Fort Kampala, Uganda, on the trail to Hoima. I 2.

North Creek—On the northern slopes of Mount Gargues, Mathews Range, British East Africa. I 4–5.

Northern Guaso Nyiro—The region of the Northern Guaso Nyiro River, north of Mount Kenia. I 4–5.

Northern Guaso Nyiro River—Formed by numerous streams in the Aberdares, northern slopes of Mount Kenia, and Mathews Range; and flowing eastward at least to the Lorian Swamp. I 4–5.

Nyangnori—In the Nandi Hills, a short distance northeast from Port Florence, British East Africa. I–J 3.

Nyeri—On the southwestern side of Mount Kenia at 6,200 feet. J 4.

Nyuki River—See Ngare Nyuki. I 4.

Nzoia River—Drains the Guas Ngishu Plateau and empties into Victoria Nyanza a few miles north of the Equator. I 3.

Oljoro O Nyon River—West side of the Mau Escarpment about 35 miles southwest of Lake Naivasha. See Njoro O Nyiro. J 4.

Omboni River—One of the headwaters of the Tana, south of Mount Kenia. Also called Oni River. J 4–5.

Oni—See Omboni River. J 4–5.

Orr Valley—At Mount Nyiro, near the southern end of Lake Rudolf. I 4.

Quoy, or Quoy Water—On the Marsabit Road northeast from Mount Lololokwi. I 5.

Ravine, Ravine Boma, or Ravine Station—On Eldoma River a short distance north of the Equator in western British East Africa; north of the railway station of Londiana. I–J 4.

Rhino Camp—Colonel Roosevelt's base camp on the west bank of the Nile in extreme southern Lado Enclave at 2° 55′ north. H–I 2.

Ruwenzori East—Eastern slopes of Mount Ruwenzori. I 2.

Ruwenzori Mountains—In extreme western Uganda just north of Albert Edward Nyanza; rise to an altitude of about 20,000 feet. I 1–2.

Saba Saba—Between Nairobi and Mount Kenia, a few miles southwest of Fort Hall. J 4–5.

Salt Marsh—Near the eastern edge of the Loita Plains, near Lime Springs, Sotik. J 4.

Salt River—South of the Northern Guaso Nyiro River, east of Chanler Falls. I 5.

Sandai—On the Northern Guaso Nyiro, 10 miles above Archer's Post. I 4–5.

Shereik—On the east bank of the Nile in north central Sudan. B–C 2–3.

Sibi River—East of the Engare Narok, in the Southern Guaso Nyiro. J 4.

Sir Alfred Pease's Farm—See Kitanga. J 4.

Sirgoit—Near the Elgeyo Escarpment, eastern edge of Guas Ngishu Plateau. I 4.

Sirgoit Lake—Near the Elgeyo Escarpment, eastern edge of Guas Ngishu Plateau, northwest from Sirgoit. I 4.

Sotik—District in southwestern British East Africa between the Mau Escarpment and Kavirondo Bay. J 3–4.

Southern Guaso Nyiro—Region of the Southern Guaso Nyiro River, southwestern British East Africa. J 4.

Southern Guaso Nyiro River—Southwestern British East Africa and northern German East Africa on the west side of the Rift Valley. J 4.

Suswa Plain—South of Lake Naivasha and west of Kikuyu. J 4.

Taita Hills, or Taita Mountains—About midway between Kilimanjaro and the coast in southeastern British East Africa. K 5.

Tana River—Heads in the Aberdares and southern side of Kenia and flows into the Indian Ocean something over 100 miles north of Mombasa. J 5.

Taveta—In British East Africa near the German East African border southeast of Mount Kilimanjaro. K 4–5.

Telek River—North of Loita Plains in southwestern British East Africa. J 3–4.

Thika River—One of the affluents of the Tana River south of Mount Kenia. J 5.

Tsavo—Station where the railroad in British East Africa is crossed by the Tsavo River; southeast of Mtoto Andei and 133 miles from Mombasa. Altitude 1,530 feet. K 5.

Turah Water—Tributary to the upper Northern Guaso Nyiro, northwest of Mount Kenia. I 4.

Ulukenia Hills—On the Athi Plains east of Nairobi. Also written Ulucania or Lukenia. J 4.

Uma—A village on the east bank of the Bahr el Jebel just north of Nimule, Uganda. H 2.

Useri River—Fifteen miles east of Kilimanjaro, in British East Africa. K 5.

Voi—Station on the railway 103 miles northwest from Mombasa. Altitude 1,830 feet. K 5.

Voi River—Crosses the railway at Voi station, 100 miles from Mombasa, and flows into the Indian Ocean between Melinda and Mombasa. Also called Muhowa, or Muho wa Mangudo. K 5.

Wambugu—Between Fort Hall and Mount Kenia at 5,300 feet altitude. J 4–5.

Wange—On the coast of British East Africa about 50 miles north of the mouth of the Tana River. J 6.

West Kenia Forest Station—A forest station on the west side of Mount Kenia at 7,500 feet altitude. I–J 4–5.

Yala River—See Lukosa River. I 3.

Zanzibar—Town on Zanzibar Island. L 5.

The arrangement of the families of rodents follows the outline given by Miller and Gidley.[1] The plates illustrate the skulls of all type-specimens of mammals of the orders included in this part which are in the museum. Three type-specimens (*Lemniscomys dorsalis mearnsi, Acomys ignitus montanus*, and *Graphiurus murinus isolatus*) are skins only and consequently are not figured. Of the 75 type skulls 57 are here figured for the first time.

Order RODENTIA.

Family SCIURIDÆ.

Genus HELIOSCIURUS Trouessart.

1880. *Heliosciurus* Trouessart, Naturaliste, vol. 2, p. 292. October. (*H. gambianus.*[2])

1909. *Sciurus* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 3, p. 469. June. (Part; not of Linnæus.)

1916. *Æthosciurus* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 17, p. 271, March. (*H. poensis.*) [Valid as a subgenus.]

In a revision of the genera of African squirrels published by Thomas in 1909,[3] three African species were provisionally referred to *Sciurus*, chiefly because of the presence in each of the small pm^3, usually absent in *Heliosciurus*. No other characters are given to distinguish *Heliosciurus* from *Sciurus* in the diagnoses and key,

[1] Synopsis of the supergeneric groups of Rodents, Journ. Washington Acad. Sci., vol. 8, pp. 431–448, July 19, 1918.

[2] See Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 3, p. 470. June, 1909.

[3] The Generic Arrangement of the African Squirrels, Ann. and Mag. Nat. Hist., ser. 8, vol. 3, pp. 467–475, June, 1909.

and *Heliosciurus* is said to possess "molars of typical *Sciurus* structure." Later these three African species were removed by Thomas [1] from *Sciurus* on the character of the baculum alone, and placed in a new genus, *Æthosciurus*, further distinguished from *Heliosciurus* by the presence of two upper premolars.

Comparison of the teeth of *Sciurus vulgaris* with those of *Heliosciurus* and those of the African species referred to *Sciurus* (and later to *Æthosciurus*) shows that all these African species are closely related and that all differ considerably from true *Sciurus*. Specimens of "*Æthosciurus*" *poensis* and "*A*" *ruwenzorii* agree in all essential details of dental structure with *Heliosciurus*, and these all differ considerably from *Sciurus vulgaris*. The lower molars, both in *Heliosciurus* and *Æthosciurus*, are more complex, with definite transverse ridge across forward part of crown which isolates a narrow valley anterior to the central basin. The transverse ridges of the upper molars of *Sciurus* are nearly parallel, while in the African species these ridges are strongly convergent on inner side, and there is always present a slightly developed hypocone. These structural peculiarities of the molars are of so much more importance than the presence or absence of a small spike-like upper premolar that it is obvious the African species referred to *Æthosciurus* are in reality closely related to *Heliosciurus* and well removed from *Sciurus*. The two African species of *Æthosciurus* that I have seen (I have not seen *A. lucifer*) are closely related, as shown by their peculiar coloration and the presence of the functional pm^3, and should on this account form a subgenus of *Heliosciurus*. In view of the very close relationship to true *Heliosciurus* and the fact that specimens of the latter sometimes exhibit spike-like small upper premolars it would hardly seem proper to recognize *Æthosciurus* as a full genus.

For measurements of specimens of the squirrels of this genus, see page 13.

HELIOSCIURUS RUWENZORII (Schwann.)

1904. *Sciurus rufobrachiatus ruwenzorii* Schwann, Ann. and Mag. Nat. Hist., ser. 7, vol. 13, p. 71. January. (Wimi, or Luimi, Valley, Ruwenzori, Uganda; type in British Museum.)

1910. *Sciurus ruwenzorii* Thomas and Wroughton, Trans. Zool. Soc. London, vol. 19, p. 497. March.

Specimen.—One, from—

Uganda: Mubuku Valley, Mount Ruwenzori (Carruthers).

The members of the Ruwenzori Expedition found this squirrel "plentiful on Ruwenzori from 6,500 feet up to 8,500 feet, the boundaries of the forest-zone" [2] A geographical race has since been described from Vulcan Forest, north of Lake Kivu.[3]

This species is a member of the subgenus *Æthosciurus*.

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 17, p. 271. March, 1916.

[2] Thomas and Wroughton, Trans. Zool. Soc. London, vol. 19, p. 497, March, 1910.

[3] *Sciurus ruwenzorii vulcanius* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 476, November, 1909.

HELIOSCIURUS RUFOBRACHIATUS NYANSÆ (Neumann).

1902. *Sciurus nyansae* NEUMANN, Sitz.-ber. Ges. nat. Freunde Berlin, 1902, p. 56. (Kwa Kitoto, Kavirondo [Kisumu], British East Africa; type in Berlin Museum.)

Specimens.—Eighteen, from localities as follows:

BRITISH EAST AFRICA: Kaimosi, 14 (Heller); Lukosa River, 4 (Heller).

Included in the Kaimosi series are small young without cheek teeth, taken January 26 and 30; and half-grown young collected February 4. The adults, collected in late January and early February, are mostly in full fresh pelage, but a few show very nicely the process of renewal. One collected January 28 has the anterior half, above and below, with the exception of a narrow band across the occiput, in fresh coat. There is considerable variation in the color of the feet in the Kaimosi series—from ochraceous orange to bright chestnut. When the extremes in color are brought together the difference is very striking.

HELIOSCIURUS KENIÆ (Neumann).

1902. *Sciurus keniae* NEUMANN, Sitz.-ber. Ges. nat. Freunde Berlin, 1902, p. 176. (West side of Mount Kenia, British East Africa, at 8,000 feet; type in British Museum.)

1910. *Heliosciurus kenia* ROOSEVELT, African Game Trails, Amer. ed., pp. 472, 476; London ed., pp. 484, 488.[1]

Specimen.—One, from—

BRITISH EAST AFRICA: West slope Mount Kenia at 7,000 feet (Heller).

This specimen, an old female, has the characteristic blotch of white on the underside of the neck, to between the forelegs. The hands and feet are colored like the back, with no indication of rufous or ochraceous beyond the pale ochraceous buff speckling of the hair tips. The species is a member of the *rufobrachiatus* group, but I am not aware that any specimens have been taken to prove intergradation with *H. r. nyansæ*.

HELIOSCIURUS UNDULATUS UNDULATUS (True).

Plate 8.

1892. *Sciurus undulatus* TRUE, Proc. U. S. Nat. Mus., vol. 15, p. 465, fig. 3. (Mount Kilimanjaro, British East Africa, at 6,000 feet; type in U. S. Nat. Mus.)

1909. *Sciurus undulatus* LYON AND OSGOOD, Bull. 62, U. S. Nat. Mus., p. 196. January 28.

1911. *Heliosciurus undulatus marwitzi* MÜLLER, Zool. Anz., vol. 37, p. 82. January. (Mount Kilimanjaro; type in Berlin Museum.)

1914. *Heliosciurus rufobrachiatus undulatus* HELLER, Smithsonian Misc. Coll., vol. 63, No. 7, p. 7. June 24.

Specimens.—Two, as follows:

BRITISH EAST AFRICA: Mount Kilimanjaro, 6,000 feet, 1 (Abbott).

[1] Since this manuscript was prepared there has appeared a popular edition of "African Game Trails" in which the pagination is entirely different from that of the original edition. The references cited throughout this list are from the original American and London editions, published in 1910. The later popular edition is without title-page date.

German East Africa: Kahe, 1 (Abbott).

The type-specimen is conspicuous among East African squirrels for its luxuriant, soft coat. It was collected at 6,000 feet altitude on June 12. The upper tooth rows each have a very small and imperfect pm^3, broken on the left side. This tooth is not functional and is in no way comparable to the small premolar regularly present in *Æthosciurus*. The large premolar has the anterior cusp developed as in *Heliosciurus*, and there can be no doubt that the species belongs in that genus. The female specimen from Kahe, German East Africa, included by True in the original description, is so different in some respects from the type that I am somewhat doubtful as to its belonging with this subspecies. It is very much shorter haired and the hair-rings on the upperparts are much brighter ochraceous buff than in the type; the skull differs from the type skull in its much broader rostrum, in this respect resembling the subspecies *daucinus* and *shindi*. The specimen was collected in September and is therefore not comparable with the type as to pelage; and with only the single skull it would be unwise to consider the specimen subspecifically distinct on the character of the broader rostrum. After a very careful study of the description of *Heliosciurus undulatus marwitzi* Müller, I can not believe that that name represents a form distinct from true *undulatus*. The type of *marwitzi* is virtually a topotype of *undulatus;* the characters presented to separate the form seem wholly unimportant and trifling; and furthermore the description of *marwitzi* agrees, even to its supposed distinguishing characters, very well indeed with the type-specimen of *undulatus*.

HELIOSCIURUS UNDULATUS SHINDI Heller.

Plate 9.

1914. *Heliosciurus rufobrachiatus shindi* Heller, Smithsonian Misc. Coll., vol. 63, No. 7, p. 7. June. (Summit of Mount Umengo, Taita Hills, British East Africa, at 6,000 feet; type in U. S. Nat. Mus.)

Specimen.—One, the type, from—

British East Africa: Mount Umengo (Heller).

"This squirrel in confined to the remnant of forest covering the extreme summit of the Taita Hills, where it is very rare. The type was the only individual seen during a fortnight's stay on the summit of Umengo Mountain. Among the Wataita tribe this squirrel is known as *shindi*" (Heller, reference as above, p. 8).

HELIOSCIURUS UNDULATUS DAUCINUS Thomas.

1909. *Heliosciurus undulatus daucinus* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 101. August. (Mombasa, British East Africa; type in British Museum.)

Specimen.—One, from—

British East Africa: Mazeras (Heller).

Measurements of squirrels of the genus Heliosciurus.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Ear.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Breadth of braincase.	Length of mandible.	Maxillary tooth row.	Mandibular tooth row.	Condition of teeth.
H. ruwenzorii.														
Uganda: Ruwenzori	172921	Male	208	228	50	19	47.1	28.5	14.3	22.5	28.5	8.8	9.0	Considerably worn.
H. rufo. nyansæ.														
B. E. A.:														
Kaimosi	182750	...do	220	222	51	.....	46.9	29.1	16.4	.....	31.5	10.1	10.4	Moderately worn.
Do	182754	...do	233	240	51	18	46.5	29.7	15.8	23.9	31.1	10.6	10.7	Do.
Do	182755	...do	220	235	52	18	47.3	29.7	16.8	23.8	31.2	10.0	10.6	Do.
Do	182756	...do	210	240	52	16	45.4	27.7	14.9	23.9	30.2	9.9	10.0	Unworn.
Do	182759	...do	230	245	51	19	48.2	30.6	16.3	23.8	31.2	10.1	10.2	Considerably worn.
Do	182751	Female	230	240	53	.....	48.1	30.7	17.0	24.2	31.5	10.2	.....	Do.
Do	182753	...do	232	252	52	17	48.8	31.4	16.2	24.8	32.9	10.3	10.2	Do.
Do	182758	...do	220	248	55	.....	47.6	30.7	16.7	24.2	32.5	10.0	10.3	Do.
Do	182762	...do	205	192	48	15	47.4	28.5	16.2	23.3	30.5	10.1	10.1	Do.
Lukosa River	182765	Male	210	220	50	16	46.5	29.8	16.6	23.8	30.7	10.2	10.1	Do.
Do	182767	...do	225	243	50	17	46.8	30.5	16.2	24.2	30.9	10.3	10.0	Little worn.
Do	182764	Female	215	218	49	18	47.7	31.6	16.6	23.9	31.7	10.0	10.3	Considerably worn.
Do	182766	...do	220	230	51	15	.....	29.0	16.9	.....	31.6	9.9	9.8	Moderately worn.
H. keniæ.														
B. E. A.: Mount Kenia	164201	...do	250	255	55	18	48.0	30.4	17.2	23.4	31.5	10.7	10.8	Much worn.
H. u. undulatus.														
B. E. A.: Kilimanjaro	[1] 19005	Male	.....	.....	.....	.....	48.0	30.6	16.8	24.3	30.8	10.7	10.5	Moderately worn.
G. E. A.: Kahe	19006	Female	.....	.....	.....	.....	.....	30.8	17.7	22.8	33.2	10.5	10.6	Considerably worn.
H. u. shindi.														
B. E. A.: Mount Umengo	[1] 182768	Male	225	283	55	18	50.5	31.2	17.2	24.3	33.3	10.8	10.4	Much worn.
H. u. daucinus.														
B. E. A.: Mazeras	182769	Female	230	290	54	16	49.1	31.5	16.9	24.1	32.1	10.8	10.7	Moderately worn.
H. m. madogæ.														
Uganda: Uma	[1] 164828	Male	202	204	44	.....	42.0	32.7	13.9	20.8	26.8	9.0	9.2	Considerably worn.

[1] Type.

HELIOSCIURUS MULTICOLOR MADOGÆ Heller.

Plate 10.

1911. *Heliosciurus multicolor madogæ* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 1. February 28. (Uma, Uganda; type in U. S. Nat. Mus.)

Specimen.—One, the type:

Uganda: Uma (K. Roosevelt).

This specimen was shot in a clump of bamboo.

HELIOSCIURUS MULTICOLOR LATERIS Thomas.

1909. *Heliosciurus multicolor lateris* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 102. August. (Lado; type in British Museum.)

Specimen.—One, from—

Lado: Rhino Camp (T. Roosevelt).

This specimen is imperfect; the forward part, with skull, is missing, and it is impossible to make satisfactory comparison with the type of Heller's *madogæ*. The Lado specimen is, however, less buffy below than the specimen from the east side of the Nile.

Genus PARAXERUS Major.

1893. *Paraxerus* Major, Proc. Zool. Soc. London, 1893, p. 189. June 1. (*P. cepapi.*)

1918. *Tamiscus* Thomas, Ann. and Mag. Nat. Hist., ser. 9, vol. 1, p. 33. January. (*P. emini.*) [Valid as a subgenus.]

Three groups of squirrels in the East African collection are combined under the genus *Paraxerus*. The *boehmi* group includes small, sharply striped species represented only by a specimen from Uganda; the *palliatus* group, larger species superficially resembling certain forms of *Heliosciurus undulatus;* and the medium sized scrub-squirrels, *ochraceus* and its subspecies, are represented by several forms. These last are closely related to the type-species of the genus, *Paraxerus cepapi* of South Africa, but are uniformly smaller and usually show traces of the back-stripes so conspicuous in the *boehmi* group, but wanting in *cepapi* and *palliatus*. Thomas has proposed that the *boehmi* group be recognized as a distinct genus, *Tamiscus;* but the characters separating this group from typical *Paraxerus* are slight and the relationship is very close. I should not be willing to admit more than subgeneric rank for *Tamiscus*.

For measurements of specimens of *Paraxerus* see pages 17–19.

PARAXERUS EMINI EMINI (Stuhlmann).

1894. *Sciurus emini* Stuhlmann, Mit Emin Pascha ins Herz von Afrika, p. 320. (Atyangara, Semliki River, Uganda.)

1902. *Sciurus emini ugandae* Neumann, Sitz.-ber. Ges. nat. Freunde Berlin, 1902, p. 180. (Kampala and Entebbe, Unganda; specimens in Berlin Mus.)

1910. *Paraxerus bœhmi emini* Roosevelt, Afr. Game Trails, Amer. ed., p. 472; London ed., p. 484.

1918. *Tamiscus emini emini* Thomas, Ann. and Mag. Nat. Hist., ser. 9, vol. 1, p. 34. January.

Specimen.—One, from—

UGANDA: 22 miles west of Kampala (Heller).

No specimen of *Paraxerus emini* from the type locality is available for comparison. Thomas[1] and Dollman[2] consider the two forms identical and Dollman has listed specimens of *emini* from Entebbe, Uganda, not far from where our specimen was collected, and at the type locality of *ugandæ*. In a review of the forms of the group published in 1918,[3] Thomas formally places *ugandæ* as a synonym of *emini*.

PARAXERUS PALLIATUS SUAHELICUS (Neumann).

1902. *Sciurus palliatus suahelicus* NEUMANN, Sitz.-ber. Ges. nat. Freunde Berlin, 1902, p. 178. (German East Africa opposite Zanzibar and southern part of British East Africa; no type designated.)

Specimens.—Twelve, including one in alcohol, as follows:

BRITISH EAST AFRICA: Mazeras (Heller).

Except for one specimen with a pale ochraceous tail, the skins in this series present a very uniform appearance.

Our collection contains no specimens of *Paraxerus palliatus palliatus*, but comparison of *suahelicus* with *Paraxerus palliatus ornatus* leaves me rather dubious as to the conspecific relationship of these two forms. Without material representing the intermediate type, however, it seems best to leave the form as usually placed by authors.

PARAXERUS OCHRACEUS ARUSCENSIS (Pagenstecher).

1885. *Sciurus cepapi* Smith var. *aruscensis* PAGENSTECHER, Jahrb. Hamb. Wiss. Anst., vol. 2, p. 42; Nat. Mus. Hamburg Ber. 1884, p. 42. (Pangani River near coast, and Great Aruscha, Meru Mts., German East Africa.)

1892. *Sciurus poensis* TRUE, Proc. U. S. Nat. Mus., vol. 15, p. 467. (Not of Smith.)

Specimens.—Thirty-one, as follows:

BRITISH EAST AFRICA: Changamwe, 18, including 4 in alcohol (Mearns); Maji-ya-chumvi, 3 (Heller); Mount Kilimanjaro, 1 (Abbott); Mount Sagalla, summit, 1 (Heller); Mtoto Andei, 1 (Heller); Ndi, 1 (Heller); Taveta, 5 (Abbott); Voi, 1 (Heller).

Only one race is represented in the series listed above. At first sight the Taita Hills lot appears somewhat lighter colored, grayer above and less ochraceous below, but a careful study of the specimens convinces me that they can not be separated from the Taveta or the coast series, which are surely identical. The extreme gray example in the Maji-ya-chumvi series is an aged female, lately nursing, and the only grayish specimen in the Taveta series proves to be the next oldest specimen of the entire thirty-one examples, and also a nursing female. The grayish "phase" of coloration in *aruscensis* may be a condition of pelage of old age, or of nursing females. Cer-

[1] Trans. Zool. Soc. London, vol. 19, p. 498. March, 1910.

[2] Revue Zool. Afric., vol. 4, p. 79. 1914.

[3] Ann. and Mag. Nat. Hist., ser. 9, vol. 1, pp. 34-38. January, 1918.

tainly the youngish specimens from all localities are the extreme of the ochraceous phase; the older specimens with well-worn teeth are grayer with lighter underparts; and the only two aged specimens, with the teeth excessively worn, are distinctly grayish rather than ochraceous in color, with gray tails and very pale buffy ochraceous bellies. These last two specimens are the only nursing females in the entire series. The Taita Hills specimens are all considerably older, with more worn molars, than the specimens from Taveta or Changamwe, and the very slightly lighter coloration may be explained in this way or even by a slight difference in pelage. At any rate, the difference is so little that it is hardly worth considering.

Doctor Abbott collected this squirrel up to 5,000 feet on Kilimanjaro. A female collected by Heller at Ndi, November 3, contained two embryos and one collected at Maji-ya-chumvi, December 13, the same number. Mearns records the color of the iris as dark brown.

Through the kindness of Dr. Witmer Stone I have been able to examine during work on this group the type of *Sciurus ganana* Rhoads,[1] from the Ganana River, between British East Africa and Italian Somaliland. The type differs from all specimens of the *Paraxerus ochraceus* group in the collection by its much yellower coloration, but is obviously closest to *aruscensis*, of which general style it is the extreme. The specimen is an adult nursing female. The upper parts and sides are much more yellowish than in any specimen of *aruscensis*, the limbs being almost clear yellowish buff. It is slightly smaller than *aruscensis*, with a more slender skull. The two forms almost certainly intergrade in eastern British East Africa. Measurements of the type of *Paraxerus ochraceus ganana* are given for comparison with other forms in the table on page 19.

PARAXERUS OCHRACEUS JACKSONI (de Winton).

1897. *Sciurus jacksoni* DE WINTON, Ann. and Mag. Nat. Hist., ser. 6, vol. 19, p. 574. May. (Kikuyu, British East Africa; type in British Museum.)

1909. *Paraxerus jacksoni capitis* THOMAS, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 105. August. (Nairobi Forest, British East Africa; type in British Museum.)

1910. *Paraxerus jacksoni* and *Paraxerus jacksoni capitis* ROOSEVELT, African Game Trails, Amer. ed., pp. 472 and 476; London ed., pp. 484 and 488.

1914. *Paraxerus jacksoni* COCKERELL, MILLER, and PRINTZ, Zool. Anz., vol. 44, p. 435. June 23.

Specimens.—Fourteen, from localities as follows:

BRITISH EAST AFRICA: Nairobi, 10 (Mearns, Loring); Nyeri, 3 (Heller, Mearns); Wambugu, 1 (Loring).

Mearns notes the mammæ, on females from Nairobi and Nyeri, as three pairs. The Nyeri specimens are approaching somewhat the Guaso Nyiro form, *Paraxerus ochraceus kahari*, which is slightly darker in color.

[1] Proc. Acad. Nat. Sci., Phila., 1896, p. 522.

Measurements of squirrels of the genus Paraxerus.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Breadth of braincase.	Breadth of rostrum.	Length of mandibile.	Maxillary tooth row.	Mandibular tooth row.	Condition of teeth.
P. emini.														
Uganda: Kampala	164974	Male	.....	.....	.....	32.0	19.4	9.9	17.1	5.3	20.9	6.3	6.2	Moderately worn.
P. p. suahelicus.														
B. E. A.:														
Mazeras	182797	...do.....	225	220	50	46.0	30.0	16.0	22.2	8.9	31.0	9.5	9.3	Do.
Do	182801	...do.....	230	226	50	46.9	30.5	16.5	22.8	8.9	31.9	9.2	9.6	Considerably worn.
Do	182805	...do.....	220	228	50	46.0	30.0	16.2	22.2	8.5	31.2	9.5	9.3	Moderately worn.
Do	182794	Female .	210	215	50	46.0	28.7	14.9	22.8	8.6	31.0	9.7	9.5	Do.
Do	182795	...do.....	210	.....	48	45.9	30.1	15.6	22.8	8.4	30.3	9.4	9.4	Considerably worn.
Do	182796	...do.....	230	218	49	.....	.....	.....	.....	8.0	31.1	9.6	9.3	Do.
Do	182798	...do.....	220	.....	51	46.7	29.9	14.8	22.4	8.8	31.5	9.6	9.7	Moderately worn.
Do	182800	...do.....	220	.....	50	48.0	.....	15.3	22.7	9.0	31.8	9.6	9.4	Much worn.
Do	182802	...do.....	210	230	52	47.3	30.3	15.0	23.0	8.6	31.1	9.5	9.8	Considerably worn.
Do	182803	...do.....	210	220	48	45.7	29.9	14.9	22.3	8.5	30.4	9.3	9.4	Do.
P. o. aruscensis.														
B. E. A.:														
Mount Kilimanjaro	35244	...do.....	.....	.....	.....	36.0	21.9	10.5	17.8	6.0	24.0	7.1	7.0	Moderately worn.
Taveta	34733	...do.....	.....	.....	.....	35.7	.....	10.6	18.2	5.9	22.7	7.3	7.1	Much worn.
Do	37376	...do.....	.....	.....	.....	.....	.....	10.4	.....	5.9	21.3	6.9	6.8	Moderately worn.
Do	34732	.....	.....	.....	.....	34.7	22.5	10.4	18.0	6.0	22.7	7.2	7.2	Do.
Mtoto Andei	181767	Male....	165	170	36	34.2	21.4	10.6	17.9	5.8	21.8	6.8	6.7	Do.
Mount Sagalla	182787	...do.....	165	162	38	35.7	22.9	10.9	18.7	6.3	23.1	7.3	7.1	Considerably worn.
Voi	182785	...do.....	160	180	40	35.6	22.2	10.9	18.1	6.2	23.6	7.1	7.3	Do.
Ndi	182786	Female .	170	160	37	36.3	22.8	10.5	17.9	6.3	23.1	7.1	7.0	Moderately worn.

Measurements of squirrels of the genus Paraxerus—Continued.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Breadth of braincase.	Breadth of rostrum.	Length of mandibile.	Maxillary tooth row.	Mandibular tooth row.	Condition of teeth.
P. o. aruscensis—Continued.														
B. E. A.—Continued.														
Maji-ya-chumvi	182788	Male	158	155	37	.....	.....	10.6	.....	5.9	22.5	7.4	6.8	Little worn.
Do	182789	...do	165	165	37	36.4	22.2	11.0	17.5	6.3	23.5	7.2	7.1	Considerably worn.
Do	182790	Female	165	.....	39	37.7	23.5	11.2	17.9	6.6	24.4	7.2	7.3	Much worn.
Changamwe	164214	Male	160	150	37	.....	.....	.....	.....	.....	.....	.....	.....	
Do	164216	...do	168	162	37	.....	.....	.....	.....	.....	.....	.....	.....	
Do	164218	...do	164	170	38	.....	.....	.....	.....	.....	.....	.....	.....	
Do	165392	.....	.....	.....	.....	35.5	22.1	11.0	18.2	5.9	22.3	6.8	6.7	Moderately worn.
Do	165397	.....	.....	.....	.....	36.7	22.7	11.6	18.2	6.3	23.6	7.0	7.1	Do.
P. o. jacksoni.														
B. E. A.:														
Nairobi	162214	Male	180	175	43	36.0	22.8	10.7	19.0	6.3	23.6	7.3	7.3	Little worn.
Do	162217	...do	170	183	43	36.4	22.1	10.7	18.7	6.2	23.5	7.7	7.4	Moderately worn.
Do	162218	...do	175	180	43	37.0	23.6	10.9	19.9	6.5	24.9	7.7	7.5	Do
Do	162220	...do	160	167	43	.....	23.5	10.9	18.8	6.4	24.3	7.5	7.7	Do.
Do	162215	Female	172	182	43	36.5	23.1	10.6	18.3	6.3	23.9	7.8	7.8	Little worn.
Do	162219	...do	173	183	43	36.9	24.1	11.8	19.9	6.6	25.4	7.5	7.6	Moderately worn.
Do	162222	...do	170	180	45	37.3	23.6	10.7	20.0	5.9	24.9	7.7	7.8	Do.
Do	162223	...do	175	.....	44	38.9	24.1	10.9	20.0	6.6	25.9	7.8	7.5	Do.
Do	164206	...do	173	183	43	37.4	23.6	11.2	19.7	6.7	24.5	7.1	6.8	Considerably worn.
Wambugu	164222	...do	171	160	43	38.1	23.3	11.3	18.7	6.3	24.5	7.7	7.8	Moderately worn.
Nyeri	182792	Male	170	176	41	38.9	23.9	11.6	19.7	6.4	25.4	7.6	7.7	Do.
Do	164205	Female	175	175	40	38.3	23.7	12.1	19.2	6.7	25.4	7.5	7.3	Considerably worn.
Do	182793	...do	170	174	40	39.3	24.7	11.5	19.2	6.9	25.2	7.8	7.7	Moderately worn.

P. o. kahari.													
B. E. A.:													
Jambeni Mountains	182791	Male	165	161	41	37.3	23.8	11.3	18.8	6.5	24.1	7.5	7.5	Do.
Meru	[1] 164203	Female	175	172	42	37.0	24.0	11.3	19.0	6.3	24.3	7.2	7.3	Do.
Mount Kenia	164200	do	165	170	43	37.5	24.3	11.3	19.0	6.3	25.5	7.9	7.8	Slightly worn.
Do	164202	Male	190	165	42	38.6	24.3	11.7	19.4	6.5	24.9	7.8	8.1	Moderately worn.
P. o. animosus.														
B. E. A.:														
Mount Nyiro	182783	do	143	.....	38	.....	.....	.....	.....	.....	.....	.....	.....	
Mount Lololokwi	182770	do	150	.....	36	34.1	21.6	10.3	17.5	6.2	22.0	7.0	7.0	Moderately worn.
Do	182772	do	160	164	37	35.3	22.7	9.9	17.7	6.2	22.4	7.1	7.1	Do.
Do	182775	do	150	170	37	34.0	21.3	9.3	17.4	5.9	22.2	7.1	6.8	Little worn.
Do	182776	do	.....	.....	.....	34.2	22.1	10.0	17.6	6.0	21.7	7.2	7.1	Moderately worn.
Do	182780	do	155	162	38	34.8	22.3	10.7	18.2	6.0	23.2	6.9	7.1	Do.
Do	182781	do	150	153	36	35.2	20.8	10.3	17.8	6.1	22.8	7.3	7.1	Do.
Do	182773	Female	155	160	38	34.8	22.3	10.2	17.6	5.8	22.7	7.4	7.1	Do.
Do	182774	do	150	158	37	35.2	22.5	10.6	17.8	6.3	22.2	7.0	6.8	Considerably worn.
Do	182777	do	143	167	37	33.2	21.2	9.6	18.0	5.8	22.1	7.1	7.1	Unworn.
Do	182779	do	150	152	36	33.5	22.3	10.2	18.2	6.0	.....	7.3	7.0	Moderately worn.
P. o. percivali.														
B. E. A.:														
Marsabit Lake	182808	Male	155	155	37	35.0	22.3	11.6	17.7	6.4	23.3	6.7	6.7	Considerably worn.
Do	182809	do	160	165	39	.....	.....	.....	.....	.....	.....	.....	.....	
Do	182806	Female	145	160	34	.....	.....	.....	.....	6.1	21.8	7.7	7.1	Unworn.
Do	182807	do	151	160	38	34.9	22.3	10.6	18.1	6.5	23.0	7.4	7.0	Little worn.
P. o. ganana.														
Ganana River	[2] 3809	do	150	170	38	35.2	21.1	10.8	16.8	5.6	22.1	7.4	6.8	Moderately worn.

[1] Type.

[2] Type, in Acad. Nat. Sci., Philadelphia.

PARAXERUS OCHRACEUS KAHARI Heller.

Plate 10.

1911. *Paraxerus kahari* Heller, Smithsonian Misc. Coll., vol 56, No. 17, p. 2. February 28. (Meru Boma, northeast of Mount Kenia, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Four, from the following localities:

British East Africa: Jambeni Mountains, S. W., 1 (Percival); Meru, 1 (Heller); Mount Kenia, west slope at 7,000 feet, 2 (Heller).

This is a slightly darker subspecies very close to *jacksoni*, but tending somewhat toward *percivali*. The type-specimen is a young nursing female, very thinly haired on the underparts, and slightly lighter and more olivaceous above than the other specimens, all of which have much darker underparts. The back-stripes are more distinct in this subspecies than in any of the other forms found in British East Africa, and are quite plainly seen on all four of the specimens. "Among the Wameru tribe this squirrel is known as *kahari*" (Heller).

PARAXERUS OCHRACEUS ANIMOSUS Dollman.

1911. *Paraxerus ochraceus animosus* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 655. November. (Mount Nyiro, British East Africa; type in British Museum.)

Specimens.—Sixteen, from localities as follows:

British East Africa: Lorghi Mountains, North, 1 (Percival); Mount Lololokwi, 13 (Heller); Mount Nyiro, 6,000 feet, 1 (Percival); Orr Valley, Mount Nyiro, 1 (Percival).

The specimens collected on Mount Lololokwi are indistinguishable in color from the topotypes from Mount Nyiro.

PARAXERUS OCHRACEUS PERCIVALI Dollman.

1911. *Paraxerus percivali* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 653. November. (Marsabit, British East Africa; type in British Museum.)

1911. *Paraxerus ochraceus augustus* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 654. November. (Marsabit, British East Africa; type in British Museum.)

Specimens.—Four, as follows:

British East Africa: Marsabit Lake (Percival).

Three skins in this small series are of the dark type of coloration while the fourth is much lighter, more yellowish-ochraceous, apparently as in the type of "*augustus.*" There can scarcely be any doubt as to the propriety of uniting these two named forms, which are evidently the extreme types of coloration in an exceedingly variable subspecies. Mr. Heller, who examined the specimens in London, made the following manuscript note on these squirrels: "Types and large series examined. The type of *augustus* is the extreme light specimen and very different from the blackish-backed type of *percivali*, but both extremes shade into one another and both inhabit the same altitudes on the mountain."

Genus PROTOXERUS Major.

1893. *Protoxerus* MAJOR, Proc. Zool. Soc. London, p. 189. (*P. stangeri.*)

The discovery of the giant forest squirrel by the Rainey Expedition in the Kakumega Forest extended the known range of this West African genus into British East Africa. A race had previously been described by Thomas from Entebbe, Uganda, as *Protoxerus stangeri centricola.*[1] No specimens of giant squirrels were obtained by the Smithsonian African Expedition in Uganda and the Entebbe form is unrepresented in our collections.

PROTOXERUS STANGERI BEA Heller.

Plate 11.

1912. *Protoxerus stangeri bea* HELLER, Smithsonian Misc. Coll., vol. 59, No. 16, p. 2. July 5. (Lukosa River, Kakumega Forest, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Twelve, from the following localities:

BRITISH EAST AFRICA: Kaimosi, 7 (Heller); Lukosa River, 5 (Heller).

The skins in this series show considerable variation in color, and it is

Measurements of specimens of Protoxerus stangeri bea from British East Africa.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Ear	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth	Breadth of braincase.	Length of mandible.	Maxillary tooth row.	Mandibular tooth row.	Condition of teeth.
Lukosa River	[1] 181786	Male	270	290	66	20	60.9	38.8	20.3	29.3	42.5	11.8	12.2	Moderately worn.
Do	182818	...do	270	290	63	20	59.4	37.8	19.8	28.6	42.2	11.3	11.9	Do.
Do	182819	...do	270	300	62	22	60.1	37.5	20.3	28.6	42.4	11.8	11.7	Do.
Do	182817	Female	260	.....	60	20	.....	37.7	20.1	28.8	41.9	11.5	12.0	Do.
Do	182820	...do	280	300	66	20	62.4	37.9	19.9	28.7	44.4	11.6	12.2	Considerably worn.
Kaimosa	182810	Male	260	305	66	21	.....	.....	.....	.....	.....	.....	.....	
Do	182811	...do	260	305	61	22	59.3	36.5	18.1	28.3	41.1	11.4	12.2	Unworn.
Do	182812	...do	240	305	62	22	.....	.....	17.5	.....	38.6	10.9	11.4	Do.
Do	182813	Female	.....	.....	.....	.....	61.5	38.4	19.3	28.6	43.1	11.9	11.7	Moderately worn
Do	182814	...do	290	310	64	21	61.6	37.1	20.9	28.4	43.4	11.5	12.2	Considerably worn.
Do	182815	...do	270	300	64	20	60.7	38.5	21.2	28.8	45.0	11.2	12.2	Much worn.
Do	182816	...do	270	285	63	22	60.3	37.1	20.3	28.3	43.0	11.5	11.9	Do.

[1] Type.

[1] *Sciurus stangeri centricola* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 18, p. 297, October, 1906.

evident that new subspecies of *Protoxerus* should not be named unless based on good series of specimens. The most common variation is in the intensity of the "reddish" color on the back and especially on the rump and hind limbs. In our series this varies from Sudan brown to chestnut, or even, in one specimen, blackish. The single blackish specimen has the upper sides of the hands and feet largely pure glossy black.

Genus XERUS Hemprich and Ehrenberg.

1832. *Xerus* HEMPRICH AND EHRENBERG, Symb. Phys., vol. 1, sig. e e (text to pl. 9). (*X. brachyotus.*)
1842. *Spermosciurus* LESSON, Nouv. Tabl. Anim., p. 110. (*X. rutilus.*)
1850. *Xeros* BURMEISTER, Verz. Mus. Halle-Wittemb., p. 15. (pro *Xerus.*)

In addition to the two well-marked forms of this ground-squirrel which are represented in our collection, several subspecies have been named from northern British East Africa, Abyssinia, and Somaliland.

For measurements of the specimens of this genus see page 23.

XERUS RUTILUS RUFIFRONS Dollman.

1911. *Xerus dabagala rufifrons* DOLLMAN, Ann. and Mag. Nat. Hist., ser. 8, vol. 7, p. 518. May. (Northern Guaso Nyiro, British East Africa; type in British Museum.)

Specimens.—Thirteen, from the following localities:

BRITISH EAST AFRICA: Archer's Post, Northern Guaso Nyiro, 1 (Heller); Isiola River, 1 (Heller): Kara Water, Marsabit Road, 3 (Heller); Kenya Water, Marsabit Road, 1 (Heller); Merelle Water, Marsabit Road, 4 (Heller); Mount Nyiro, south of, 1 (Percival); Northern Guaso Nyiro River, 1 skull (K. Roosevelt); Quoy Water, Marsabit Road, 1 (Heller).

There is considerable variation among the skins of this series in the extent of the red on the crown and also in the amount of black on the head and nape. The general color of the back varies greatly in the amount of blackish speckling, extent of the yellowish-buff dorsal area, and in the intensity of the vinaceous ground color. The skins from more northern localities are paler than those from Archer's Post and Isiola River and are doubtless approaching some one of the Abyssinian forms in color.

A female collected at Archer's Post, September 23, contained two large embryos.

XERUS RUTILUS SATURATUS Neumann.

1892. *Xerus rutilus* TRUE, Proc. U. S. Nat. Mus., vol. 15, p. 467. (Specimen from Taveta; not of Cretzschmar.)
1900. *Xerus saturatus* NEUMANN, Zool. Jahrb., Syst., vol. 13, p. 546. (Kibwezi, British East Africa.)

Specimens.—Two, as follows:

BRITISH EAST AFRICA: Taveta, 1 (Abbott); Voi River, Taita Hills, 1 (Heller).

Measurements of squirrels of the genera Xerus and Euxerus.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Breadth of braincase.	Breadth of center of rostrum.	Length of mandible.	Maxillary tooth row.	Mandibular tooth row.	Condition of teeth.
X. r. rufifrons.														
B. E. A.:														
Marsabit Road	182823	Male	230	185	50	49.7	29.4	15.4	24.5	9.6	31.7	10.1	10.8	Much worn.
Do	182826	do	230	195	50	.....	.....	16.0	.....	9.5	31.0	9.9	10.3	Do.
Do	182827	Female	220	187	51	48.7	29.7	15.4	24.1	9.6	31.4	9.8	10.3	Do.
Do	182829	do	230	193	56	50.6	30.1	15.1	24.2	10.0	32.0	10.4	10.3	Do.
Archer's Post	182831	do	220	.....	51	49.4	30.5	15.4	24.9	10.3	31.6	9.9	10.4	Moderately worn.
Isiola River	182822	do	230	203	56	48.0	30.0	13.4	24.7	9.4	32.0	10.8	11.4	Unworn.
X. r. saturatus.														
B. E. A.:														
Voi River	182832	do	235	185	52	53.4	33.3	17.9	25.7	11.3	.....	10.8	.....	Moderately worn.
Taveta	35110	do	.....	.....	.....	.....	.....	15.9	.....	10.5	33.9	11.0	11.4	Do.
E. e. leucoumbrinus.														
Eritrea:														
Agordat	122540	do	.....	.....	.....	.....	31.1	15.5	25.8	11.0	36.6	13.2	13.1	Do.
Do	122541	do	.....	.....	.....	.....	32.9	14.7	25.1	10.8	37.0	12.6	12.7	Much worn.
E. lacustris.														
B. E. A.: Kaimosi	197964	Male	298	269	62	57.8	33.8	15.7	26.5	11.2	38.6	13.2	13.5	Moderately worn.
E. microdon.														
B. E. A.:														
Fort Hall	164238	do	290	200	63	59.2	32.5	17.4	25.6	9.8	39.0	12.3	12.7	Do.
Do	164240	do	313	215	62	60.4	34.3	17.4	26.1	11.2	39.8	13.2	12.9	Do.
Oni	164241	do	285	220	63	57.9	32.4	16.4	25.4	9.6	37.5	13.1	12.9	Little worn.
Wambugu	164239	Female	265	205	61	56.8	30.0	16.2	24.7	9.0	.....	13.4	13.3	Unworn.
Mtoto Andei	181768	Male	285	125	61	58.0	32.2	15.8	25.9	9.7	36.7	12.9	12.3	Moderately worn.
Do	181771	do	290	208	61	.....	.....	16.5	.....	10.7	37.9	.....	12.2	Do.
Do	181770	Female	275	220	63	57.5	31.8	16.0	25.6	10.2	37.3	13.3	12.7	Do.
Do	181772	do	280	205	61	.....	.....	.....	.....	10.4	36.7	12.7	12.8	Do.

64952—19—Bull. 99, pt. 2——3

This darker race of *Xerus rutilus* must be very much like the later described *Xerus dabagala dorsalis* Dollman[1] from Baringo. Mr. Dollman has in fact referred specimens from the Tsavo River, virtually topotypes, to his form.[2] Neumann's specimens were young, which perhaps accounts for his description of the hands and feet as "deep rust-red;" the feet of younger specimens of ground squirrels seem to be darker than those of adults. The color is still more likely to have been due to soil stain, as the Taveta specimen collected by Doctor Abbott has the feet deeply stained by red soil, the pigment being plainly visible with the aid of a lens.

Genus EUXERUS Thomas.

1909. *Euxerus* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 3, p. 473. June. (*E. erythopus.*)

No East African forms have been named in this genus since Mr. Thomas published his key and synopsis of the group (as a subdivision of *Xerus*) in 1905.[3]

For measurements of specimens of squirrels of this genus see page 23.

EUXERUS ERYTHOPUS LEUCOUMBRINUS (Rüppell).

[1835]. *Sciurus leucoumbrinus* Rüppell, Neue Wirbelth. Fauna Abyssinien gehörig, Säug., p. 38. 1835–1840. (Abyssinia, Sennaar, and Kordofan.)

Specimens.—Two, as follows:

Eritrea: Agordat (from W. F. H. Rosenberg).

EUXERUS LACUSTRIS (Thomas).

1905. *Xerus erythropus lacustris* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 15, p. 388. April. (Masindi, Unyoro, Uganda; type in British Museum.)

Specimen.—One, from—

British East Africa: Kaimosi (Turner).

No specimens of typical *Euxerus lacustris* are available for a direct comparison, but the Kavirondo specimen agrees so well with Mr. Thomas's description that I have no hesitation in labeling it *lacustris*. I believe the form to go rather with *microdon* than with *erythopus*, as the teeth most resemble the East African form. All the races will probably prove to be subspecies of *erythopus*.

EUXERUS MICRODON (Thomas).

1905. *Xerus microdon* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 15, p. 389. April. (Kitui, British East Africa; type in British Museum.)

1905. *Xerus microdon fulvior* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 15, p. 389. April. (Fort Hall, British East Africa; type in British Museum.)

1910. *Euxerus microdon fulvior* Roosevelt, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

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[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 7, p. 519. May, 1911.

[2] Revue Zool. Africaine, vol. 4, p. 89. July, 1914.

[3] Ann. and Mag. Nat. Hist., ser. 7, vol. 15, pp. 387–390. April, 1905.

Specimens.—Thirteen, from localities as follows:

British East Africa: Fort Hall, 2 (Mearns); Mtoto Andei, 6 (Heller); Oni, 1 (Loring); Wambugu, 4 (Loring, Mearns).

The specimens from Mtoto Andei are apparently inseparable from those from the vicinity of Fort Hall. As with all ground squirrels, skins of this species are frequently stained from the soil and the color of the feet, tail, and even the entire body is sometimes greatly changed. This is especially so with animals living in red soil and the pigment can sometimes be seen with a strong glass.

Mearns records the mammæ as $\frac{0}{0}-\frac{2}{2}-\frac{1}{1}=3$ pairs, on a specimen from Wambugu.

Family CRICETIDÆ.

Genus DIPODILLUS Lataste.

1881. *Dipodillus* Lataste, Le Naturaliste, vol. 1, p. 506. (*D. simoni.*)

Four forms of these pigmy gerbils are recognized in British East Africa; three of them are included in the National Museum collection. The fourth, described by Dollman from Voi as *Dipodillus percivali*,[1] is probably the *Gerbillus pusillus* of Peters,[2] the type of which came from Taita and is preserved in the Berlin Museum. Numerous species are known from northern Africa.

For measurements of specimens of *Dipodillus* see table, page 26.

DIPODILLUS WATERSI (de Winton).

1901. *Gerbillus* (*Dipodillus*) *watersi* de Winton, Nov. Zool., vol. 8, p. 399. December 31. (Shendi, Sudan; type in British Museum.)

1905. *Dipodillus watersi* Schwann, Nov. Zool., vol. 12, p. 3. January.

Specimens.—Three, as follows:

Sudan: Kerma, 1 (Rothschild); Merowe, 2 (Rothschild).

This species is superficially very much like *Dipodillus stigmonyx* from Khartoum, but is slightly paler in color and has a smaller hind foot.

DIPODILLUS STIGMONYX (Heuglin).

1877. *Meriones stigmonyx* Heuglin, Reise Nordost-Afrika, vol. 2, p. 78. (Khartoum, Sudan.)

Specimens.—Six, including two in alcohol, as follows:

Sudan: Khartoum (Heller, Loring).

DIPODILLUS DIMINUTUS Dollman.

1911. *Dipodillus diminutus* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 7, p. 520. May. (Nyama Nyango, Northern Guaso Nyiro, British East Africa; type in British Museum.)

Specimen.—One, from—

British East Africa: Kurseine, Northern Guaso Nyiro (Heller).

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[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 14, p. 488. December, 1914.

[2] Mon. -ber. Akad. Berlin, 1878, p. 201.

Measurements of the pygmy gerbils of the genus Dipodillus.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot	Skull: Condylobasal length.	Greatest breadth.	Length of nasals.	Breadth of braincase.	Length of auditory bulla.	Mandible.	Maxillary tooth row.	Mandibular tooth row.	Observations.
D. watersi.														
Sudan:														
Kerma	141502	Female	69	90	21	.....	.....	7.8	.....	7.6	12.3	3.5	3.4	Teeth moderately worn.
Merowe	141503	Male	69	85	20	.....	11.8	7.0	11.2	7.1	11.2	3.3	3.4	Do.
Do	141504	do	74	87	20	19.8	12.2	7.4	11.3	7.4	11.4	3.3	3.4	Do.
D. stigmonyx.														
Sudan:														
Khartoum	165283	do	68	93	21	20.3	12.0	7.8	11.5	7.4	11.7	3.3	3.1	Do.
Do	165284	do	80	108	24	21.3	12.8	8.7	11.8	7.6	12.3	3.3	3.3	Do.
Do	165285	do	80	120	24	22.2	13.2	8.8	12.0	7.8	12.7	3.3	3.3	Do.
Do	165286	do	70	111	22	21.3	12.6	8.3	11.8	7.8	12.2	3.3	3.3	Do.
D. diminutus.														
B. E. A.: N. Guaso Nyiro	183924	Female	72	100	19	21.7	12.7	9.0	11.7	7.3	12.5	3.3	3.4	Teeth much worn.
D. h. harwoodi.														
B. E. A.:														
Lake Naivasha	162326	Male	78	107	22	21.8	12.8	9.4	12.1	7.7	12.7	3.8	3.9	Teeth moderately worn.
Do	162293	do	80	96	22	21.9	13.4	9.4	12.6	7.7	13.3	3.9	3.9	Do.
Do	162295	do	86	112	22	22.9	13.5	10.1	12.5	7.8	13.5	4.0	3.8	Do.
Do	162297	do	80	100	22	22.9	13.3	10.2	12.6	7.8	13.3	3.8	3.8	Do.
Do	162298	do	82	101	22	22.6	13.5	9.4	12.7	7.6	13.2	4.0	3.8	Do.
Do	162300	do	77	107	22	21.9	13.2	9.4	12.2	7.8	12.8	3.8	3.7	Do.
Do	162303	do	81	102	22	22.2	12.6	9.8	11.4	7.4	13.2	4.0	3.8	Do.
Do	162287	Female	78	102	22	21.8	13.3	9.5	12.3	7.7	13.0	3.8	3.7	Do.
Do	162288	do	83	109	22	22.8	13.5	9.8	12.1	7.9	13.3	4.0	3.8	Do.
Do	162291	do	78	106	22	22.1	13.2	9.8	12.0	7.5	13.3	3.8	3.6	Do.

Do	162292	...do....	75	105	22	21.8	12.8	9.5	12.1	7.8	12.6	3.9	3.7	Do.
Do	162305	...do....	80	107	22	22.0	13.2	9.8	11.9	7.7	13.0	3.9	3.8	Do.
Do	162306	...do....	75	101	22	21.7	12.9	9.4	12.1	7.3	12.7	3.9	3.7	Do.
Do	162307	...do....	80	99	22	21.3	13.1	9.7	12.3	7.8	12.6	3.8	3.8	Teeth much worn.
Do	162308	...do....	78	98	21	22.8	13.1	9.8	12.4	7.3	12.9	3.9	3.8	Teeth moderately worn.
Do	162310	...do....	77	101	22	22.5	13.3	9.8	12.2	7.5	13.3	3.7	3.6	Do.
Do	162311	...do....	83	99	22	22.7	13.8	10.2	12.4	7.6	14.0	3.8	3.3	Teeth much worn.
Do	162312	...do....	80	101	22	22.2	13.3	9.5	12.6	7.8	13.8	4.1	3.9	Teeth moderately worn.
Do	162314	...do....	80	104	22	22.8	13.3	9.8	12.2	7.7	13.5	3.9	3.8	Do.
Naivasha Station	162319	Male....	77	102	22	23.1	13.8	10.0	12.5	7.4	13.6	3.7	3.5	Do.
D. h. luteus.														
B. E. A.:														
So. Guaso Nyiro River	162274	...do....	81	98	21	22.6	13.0	9.9	12.1	7.6	12.8	3.7	3.5	Do.
Do	162275	...do....	80	99	22	22.6	13.4	9.5	12.5	7.7	13.5	4.0	3.4	Do.
Do	162276	...do....	84	97	21	23.0	13.4	10.2	12.5	7.5	13.8	3.8	3.6	Do.
Do	162282	...do....	77	103	21	22.2	13.4	8.9	12.6	7.6	13.0	3.7	3.5	Do.
Do	162273	Female.	80	95	23	22.6	13.3	.....	12.2	7.6	13.3	4.0	3.6	Do.

The soles of the feet in this specimen are more hairy than in any specimen of *Dipodillus harwoodi*, but do not approach in this respect the conditions usual in *Gerbillus* or in *Taterillus*.

DIPODILLUS HARWOODI HARWOODI (Thomas).

1901. *Gerbillus* (*Dipodillus*) *harwoodi* THOMAS, Ann. and Mag. Nat. Hist., ser. 7, vol. 8, p. 275. October. (Lake Naivasha, British East Africa; type in British Museum.)

1910. *Dipodillus harwoodi* ROOSEVELT, African Game Trails, Amer. ed., pp. 472, 477, 484: London ed., pp. 484, 488, 495. (Part; specimens from Naivasha.)

Specimens.—Forty-nine, from localities as follows:

BRITISH EAST AFRICA: Lake Naivasha, 43, including 10 in alcohol (Loring, Mearns); Naivasha Station, 6 (Loring).

On the sandy desert flats on the southwest side of Lake Naivasha they [*D. harwoodi*] were abundant. The holes running obliquely into the ground were sometimes blocked with sand from the inside. On the opposite side of the lake there was less sand, and here the gerbilles were found only in spots. In sand alone the burrows resembled those described, but where the ground was hard they entered almost perpendicular and were never blocked. Often seed pods and tiny cockle burrs were strewn about the entrances.[1]

DIPODILLUS HARWOODI LUTEUS Dollman.

1910. *Dipodillus harwoodi* ROOSEVELT, African Game Trails, Amer. ed., pp. 477, 484; London ed., pp. 488, 495. (Part; specimens from Southern Guaso Nyiro region.)

[1] Loring, in Roosevelt's African Game Trails, Appendix C, p. 484. 1910.

1914. *Dipodillus luteus* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 14, p. 489. December. (Southern Guaso Nyiro, Nyanza Province, British East Africa; type in British Museum.)

Specimens.—Nine, including three in alcohol, as follows:

British East Africa: Southern Guaso Nyiro River (Loring, Heller, Mearns).

The Southern Guaso Nyiro form of the pygmy gerbil is closely related to true *harwoodi* of Naivasha. It is distinguished only by its paler and brighter color.[1]

Mearns records the color of the iris in this animal as dark brown.

Genus TATERILLUS Thomas.

1910. *Taterillus* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 222. August. (*T. emini.*)

Although several forms of gerbils of the genus *Taterillus* have been recorded from British East Africa northward into Sudan, only one species was obtained by the Smithsonian African Expedition and no other specimens have ever reached the museum from any source.

TATERILLUS EMINI (Thomas).

1892. *Gerbillus emini* Thomas, Ann. and Mag. Nat. Hist., ser. 6, vol. 9, p. 78. January. (Wadelai, Uganda; type in British Museum.)

1910. *Tatera emini* Roosevelt, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

Specimens.—Five, from localities as follows:

Lado: Rhino Camp, 1 (Loring).

Uganda: Gondokoro, 4, including 1 in alcohol (Loring).

Genus TATERA Lataste.

1882. *Tatera* Lataste, Le Naturaliste, vol. 4, p. 126. (*T. indicus.*)

1897. *Gerbilliscus* Thomas, Proc. Zool. Soc. London, p. 433. (*T. böhmi.*) [Valid as a subgenus.]

1917. *Taterona* Wroughton, Journ. Bombay Nat. Hist. Soc., vol. 25, No. 1, p. 40. (*T. afra.*)

Two well marked subgenera of gerbils referable to *Tatera* are found in East Africa. Typical *Tatera* is widely distributed and is abundantly represented in the museum collection. The second subgenus *Gerbilliscus*, is represented in the collection by only a single form. This is the large white-tailed gerbil of the *böhmi* group which is abundant in the Southern Guaso Nyiro region of British East Africa, and which was described by Heller as *Tatera varia.*

In describing the genus *Taterona*, Wroughton has separated the species usually referred to *Tatera* Lataste into two groups, the African forms all going into his new genus while *Tatera* is restricted to Asia. The characters used seem to be of too little value to justify such a proceeding; of those mentioned, the shape of the lateral parietal

[1] Not "duller," as stated by Dollman in the original description.

sutures alone appears to be fairly constant, and it seems of trifling importance. Some specimens of African species have a dark stripe along the under side of the tail, one of the chief characters used by Wroughton to distinguish the Asiatic species (see below, under *Tatera vicina vicina*).

For measurements of specimens of *Tatera* see table, pages 33–35.

TATERA VICINA VICINA (Peters).

1878. *Gerbillus vicinus* Peters, Mon.-ber. Kön. Akad. Wiss. Berlin, 1878, p. 200. (Kitui, Ukamba, British East Africa; type in Berlin Museum.)

1906. *Tatera mombasæ* Wroughton, Ann. and Mag. Nat. Hist., ser. 7, vol. 17, p. 493. May. (Takangu, British East Africa; type in British Museum.)

1910. *Tatera mombasæ* Roosevelt, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

Specimens.—Sixty-one, from localities as follows:

British East Africa: Changamwe, 8, including 3 in alcohol (Mearns); Maji-ya-chumvi, 10 (Heller); Mariakani, 1 (Heller); Mazeras, 28 (Heller); Mount Sagalla, 1 (Heller); Mtoto Andei, 13, including 3 in alcohol (Heller).

I am unable to distinguish by any characters whatever specimens from the coast region near Mombasa from specimens collected at Mtoto Andei, which are presumably typical of *vicina*. Mtoto Andei is in the same kind of country as is Kitui, the type locality of *vicina*. An intensity of color would naturally be looked for in the coast specimens, but these are not darker on the average than skins from farther inland. There is a remarkable variation in the color of the tails in the entire lot. Some are entirely blackish on the terminal third, have a broad stripe of dark brown above, and a narrow stripe below, so that the light brownish colored area below is much restricted. Others have only a narrow stripe of brown along the upper side and have the entire under side light buffy. Between these extremes are all degrees of variation.

Mearns records the color of the iris as dark brown. Heller gives records of embryos as follows: Maji-ya-chumvi, December 10, five; December 12, five. Heller's manuscript notes on the type-specimen of *Gerbillus vicinus* Peters in the Berlin Museum are as follows:

Type, 5273, Kitui (Coll. Hildebrandt). Marked in Peter's writing with name, and no doubt the type. Skull with only rostrum and molars intact; braincase broken badly. One other specimen mounted, but skull of this only represented by tip of rostrum with incisors.

TATERA VICINA POTHÆ Heller.

Plate 12,

1910. *Tatera pothæ* Heller, Smithsonian Misc. Coll., vol. 56, No. 9, p. 2. July 22. (Potha, Kapiti Plains, British East Africa; type in U. S. Nat. Mus.)

1910. *Tatera pothæ* Roosevelt, African Game Trails, Amer. ed., pp. 472, 476; London ed., pp. 484, 488.

Specimens.—Thirty, from localities as follows:

British East Africa: Kapiti Plains, 10, including three in alcohol (Loring); Suswa Plains, 1 (Heller); Ulukenia Hills, 19, including 5 in alcohol (Loring).

This is a very slightly differentiated subspecies. In color it is almost precisely as in true *vicina*, but the tail is lighter colored and apparently never becomes blackish as in the coast form. In African Game Trails, Roosevelt and Heller say of this form:

> Common on the Athi Plains, in open ground at the foot of the hills. Live in short grass, not bush. Nocturnal. Live in burrows, each burrow often possessing several entrances, and sometimes several burrows, all inhabited by same animal, not communicating.

Loring found four embryos, each 17 mm. long, in a female collected November 28 at Ulukenia Hills.

TATERA VICINA ICONICA Dollman.

1911. *Tatera iconica* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 7, p. 521. May. (Nyama Nyango, Northern Guaso Nyiro; type in British Museum.)

Specimens.—Seventeen, from the following localities:

British East Africa: Isiola River, 3 in alcohol (Heller); Mount Gargues, 4 (Heller); Mount Lololokwi, 2 (Heller); Northern Guaso Nyiro River, 8, including 4 in alcohol, (Heller).

This is another slight color subspecies of *T. vicina*. There appear to be no skull characters to distinguish it from true *vicina* or from *pothæ*, and the color difference is only average. Certain specimens almost exactly match in every detail specimens of *vicina*, but the series as a whole appears slightly paler with less indication of a darker dorsal area.

TATERA NIGRICAUDA NIGRICAUDA (Peters).

1878. *Gerbillus nigricaudus* Peters, Mon.-ber. Kön. Akad. Wiss. Berlin, 1878, p. 200. (Ndi, Taita, British East Africa; type in Berlin Museum.)

Specimens.—Four, from localities as follows:

British East Africa: Maji-ya-chumvi, 1 (Heller); Mtoto Andei, 2, including 1 in alcohol (Heller); Voi, 1 (Heller).

Notwithstanding the great difference in the color of the tail between typical examples of *nigricauda* and *vicina*, there are numerous young examples which have been placed with the series of *vicina* which might equally well be supposed to belong under *nigricauda*. I can find no characters whatever to separate the two species except the color of the tail, and as shown under remarks on *Tatera vicina vicina* there is almost every intermediate stage in color pattern between the lightest and darkest colored tails in that form; and the step to the totally black tail of "*nigricauda*" is small.

The greatest skull length of Peters's type-specimen is given as 49 mm., and Wroughton records a specimen in the British Museum

with a greatest skull length of 52 mm. These measurements far exceed the dimensions of any specimen in our collection; the longest skull before me measures 41.5 in greatest length, but this specimen is a female with teeth only moderately worn and might somewhat exceed these measurements if older. No really old male skulls are in the collection, and I am consequently unable to determine to my own satisfaction the status of *nigricauda* and *vicina*, but I shall not be surprised if later some worker with more adult material than seems at present available, combines the two in a single species, which would take the name *nigricauda*.

Heller's notes on the type-specimens of *Gerbillus nigricaudus* Peters, which he examined at Berlin, are as follows:

Skull No. 5278, Taita (Coll. Hildebrandt). Skin destroyed by insects and thrown away. Skull perfect, except one zygomatic arch gone.

TATERA NIGRICAUDA NYAMA Dollman.

1911. *Tatera nigricauda nyama* Dollman. Ann. and Mag. Nat. Hist., ser. 8, vol. 7, p. 522. May. (Nyama Nyango, Northern Guaso Nyiro, British East Africa; type in British Museum.)

Specimens.—Nineteen, from localities as follows:

British East Africa: Archer's Post, 2 (Heller); Isiola River, 8 (Heller); Lakiundu River, 2 (Heller); Mount Gargues, 1 (Heller); Orr Valley, Mount Nyiro, 6 (Percival).

I find it equally hard to separate satisfactorily specimens of this form from *Tatera vicina iconica*, as with the case of *nigricauda* and *vicina* of eastern British East Africa. There are no very old skulls of males in the series which may account for my trouble, but I have been unable to find any character other than the rather unsatisfactory one of relative amount of black in the coloration of the tail to distinguish *nyama* from *iconica*.

The specimens from Orr Valley are much paler, more rusty colored than the skins from the Northern Guaso Nyiro region, but are apparently in a different state of pelage and are hardly comparable. They were collected in March and early April while the Guaso Nyiro skins were taken in July and September. Skins taken at the same season might show the animals from the two localities to be slightly different. A subspecies from a comparatively short distance to the north on the Sagan River, Bodessa, southern Abyssinia, was recently described by Frick as *Tatera nigricauda bodessæ*.[1]

TATERA NIGRICAUDA PERCIVALI Heller.

Plate 13.

1914. *Tatera nigracauda* (sic) *percivali* Heller, Smithsonian Misc. Coll., vol. 63, No. 7, p. 8. June 24. (Lorian Swamp, British East Africa; type in U. S. Nat. Mus.)

Specimen.—One, the type, from—

British East Africa: Lorian Swamp (Percival).

[1] Ann. Carnegie Museum, vol. 9, p. 14. June 6, 1914.

I can add no information regarding the status of this form beyond what is given in the original diagnosis. The type-specimen, a rather young adult female, is considerably paler, more buffy, than any specimen of *Tatera n. nyama* in the collection, and the form will doubtless stand as a color subspecies of the *vicina-nigricauda* group.

TATERA LIODON DUNDASI Wroughton.

1909. *Tatera dundasi* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 539. December. (Kirui, Mount Elgon, British East Africa; type in British Museum.)

Specimens.—Two, as follows:

British East Africa: Nzoia River, Guas Ngishu Plateau (Heller).

TATERA LIODON SMITHI Wroughton.

1909. *Tatera smithi* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 3, p. 249. March. (Mubende, Unyoro, Uganda, type in British Museum.)

Specimens.—Fifteen, from localities as follows:

Uganda: Kikandwa, 1 (Loring); Kikonda, 5 (Loring); Kisimbiri, 2 (Loring); Kisingo, 3 (Loring); Lialo, 1 (Loring).

British East Africa: Kaimosi, 3 (Heller).

Closely related to *dundasi*.

TATERA NIGRITA Wroughton.

1906. *Tatera nigrita* Wroughton, Ann. and Mag. Nat. Hist., ser. 7, vol. 17, p. 491. May. (Masindi, Unyoro, Uganda, type in British Museum.)

1910. *Tatera nigrita* Roosevelt, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

Specimen.—One, as follows:

Uganda: Kisimbiri (Loring).

Specimens of this small, dark *Tatera* might easily be mistaken for the young of the larger *Tatera liodon smithi*, which occurs at the same localities.

TATERA MACROPUS (Heuglin).

1864. *Meriones macropus* Heuglin, Nov. Act. Acad. Caes. Leop.-Car. Germ. Nat. Cur., Dresden, vol. 31, Article 7, p. 9. (Between Djur and Kosanga Rivers, Bongo, Sudan.)

Specimens.—Eight, as follows:

Lado: Rhino Camp, 1 skull only (Loring).

Uganda: Ledgus, 1 (Loring); Lombeki River, 1 (Loring); Nimule, 5, including 1 in alcohol (Heller, Loring).

These specimens have been compared in London by Heller with skins from Bor, Sudan, identified as *Tatera macropus*. The form represented is in color very much like *Tatera liodon smithi* from farther south in Uganda, but is less dark . The skulls are much as in *smithi*, but have decidedly lighter colored incisors which show deeper grooves on the face than usual in *smithi*.

Measurements of specimens of Tatera.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Ear.	Skull: Condylobasal length.	Zygomatic breadth.	Length nasals.	Length auditory bulla.	Mandible.	Upper tooth row.	Lower tooth row.	Observations.
T. v. vicina.														
B. E. A.:														
Mazeras	183960	Male	135	170	35	21	35.9	19.3	17.2	11.4	21.3	6.5	6.2	Teeth moderately worn.
Do	183963	do	160	186	37	19	38.0	21.7	18.7	11.7	22.3	7.2	6.8	Do.
Do	183981	do	150	188	38	22	38.2	19.8	18.5	11.3	23.5	7.0	6.7	Do.
Do	183982	do	150	188	37	22	38.0	20.8	17.8	11.7	23.3	6.8	6.8	Do.
Do	183984	do	148	178	37	22	36.6	19.7	18.0	10.9	22.3	7.0	6.8	Do.
Do	183971	Female	145	185	35	21	36.5	19.7	16.7	10.6	22.1	6.8	6.5	Do.
Do	183972	do	145	173	37	21	36.2	19.8	17.1	11.5	21.7	6.9	6.8	Do.
Do	183983	do	150	168	36	20	35.7	19.5	17.3	10.9	22.0	7.1	6.3	Do.
Do	183985	do	160	188	38	21	39.4	21.5	19.5	11.8	23.6	7.4	6.7	Teeth considerably worn.
Mariakani	183999	Male	150	178	36	20	36.9	19.5	16.5	10.8	22.2	7.1	6.5	Teeth moderately worn.
Maji-ya-chumvi	183993	do	145	177	35	21	37.5	20.9	18.2	10.9	22.4	6.6	6.2	Do.
Do	183997	do	160	.....	40	23	.....	.....	19.4	.....	25.0	7.3	7.2	Teeth much worn.
Do	183994	Female	165	197	37	21	39.6	21.0	19.2	11.4	24.0	6.8	6.7	Do.
Do	183998	do	142	175	35	20	36.0	18.8	16.6	10.5	21.6	6.7	6.6	Teeth moderately worn.
Mount Sagalla	183988	Male	130	170	35	20	34.4	18.7	16.5	10.8	20.5	6.3	6.0	Do.
Mtoto Andei	181697	do	160	171	36	22	38.9	20.9	18.1	11.0	23.7	6.8	6.3	Do.
Do	181701	Female	160	174	35	20	40.0	21.3	19.7	11.4	23.6	6.2	6.4	Teeth much worn.
Do	181707	do	150	178	34	22	37.3	20.3	18.5	10.8	22.7	6.7	6.3	Teeth moderately worn.
Do	181709	do	150	183	35	22	37.4	20.2	17.3	10.7	21.7	6.5	6.0	Do.
T. v. pothæ.														
B. E. A.:														
Ulukenia Hills	163414	Male	148	194	36	.....	36.5	20.1	17.4	11.0	22.0	6.0	7.0	Teeth considerably worn.
Do	163415	do	146	184	35	.....	36.1	20.0	18.0	10.5	21.8	6.7	6.6	Do.
Do	163413	Female	145	171	34	.....	36.7	19.9	18.1	11.2	21.8	6.5	5.9	Teeth moderately worn.
Do	163421	do	158	188	37	.....	37.7	19.0	17.6	11.7	22.8	6.6	6.2	Do.

Measurements of specimens of Tatera—Continued.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Ear.	Skull: Condylobasal length.	Zygomatic breadth.	Length nasals.	Length auditory bulla.	Mandible.	Upper tooth row.	Lower tooth row.	Observations.
T. v. pothæ—Continued.														
B. E. A.—Continued.														
Kapiti Plains	161718	Male	145	192	37	.....	37.5	20.4	18.5	10.8	22.8	6.8	6.1	Teeth moderately worn.
Do	161712	Female	130	132	35	.....	36.8	20.2	17.3	10.8	21.7	6.8	6.5	Do.
Do	161714	...do	142	182	36	.....	37.3	20.4	18.0	11.3	22.3	6.7	6.3	Do.
Do	[1]161716	...do	152	203	35	.....	39.0	21.2	19.6	11.7	23.3	6.8	6.0	Do.
Do	161717	...do	143	181	35	.....	36.4	20.2	17.5	10.7	22.3	6.7	5.9	Do.
T. v. iconica.														
B. E. A.:														
Mount Gargues	183950	Male	140	190	36	23	35.4	20.2	17.1	10.7	21.8	6.7	6.3	Do.
Do	183953	...do	145	195	36	23	37.9	20.7	18.5	11.3	22.8	6.5	6.1	Do.
Do	183951	Female	130	191	34	23	35.2	19.8	17.4	10.3	21.5	6.7	6.2	Do.
Do	183952	...do	145	183	36	21	36.5	19.7	17.5	11.0	22.1	6.4	6.3	Do.
N. Guaso Nyiro	183953	Male	138	188	36	21	35.2	19.4	16.8	10.3	20.9	6.1	6.0	Do.
T. n. nigricauda.														
B. E. A.:														
Voi	183946	Female	145	183	37	22	37.7	20.8	17.5	11.4	22.8	6.8	6.8	Do.
Maji-ya-chumvi	183947	Male	140	175	37	.....	35.3	18.9	16.4	10.4	21.4	6.5	6.4	Teeth little worn.
T. n. nyama.														
B. E. A.:														
Orr Valley	183933	Female	134	182	35	22	35.1	19.2	16.3	10.9	21.6	6.4	6.3	Teeth moderately worn.
Mount Gargues	183944	Male	155	177	38	25	39.4	23.2	19.1	12.3	23.9	6.9	6.5	Do.
Lakiundu River	183943	...do	150	204	37	21	37.9	20.2	19.3	11.0	23.0	6.5	6.0	Do.
Isiola River	183938	...do	140	178	36	20	35.4	19.4	17.2	11.0	21.4	6.1	5.7	Teeth little worn.
Do	183934	Female	140	196	37	21	37.3	20.4	17.7	11.8	22.1	6.8	6.0	Teeth moderately worn.
Do	183937	...do	150	191	37	21	36.7	20.5	17.8	11.0	22.6	6.7	6.8	Do.
T. n. percivali.														
B. E. A.: Lorian Swamp	[1]183945	...do	133	170	35	21	35.8	19.6	16.7	10.9	21.6	6.5	6.2	Do.

T. l. dundasi.														
B. E. A.:														
Nzoia River	163409	Male	175	172	38	22	41.0	22.1	17.6	12.3	25.3	7.3	7.3	Teeth considerably worn.
Do	163408	Female	170	161	37	21	39.1	20.2	16.5	11.4	24.8	7.4	7.4	Do.
T. l. smithi.														
Uganda:														
Kikonda	165302	Male	178	160	34	17	38.9	20.8	16.4	11.3	24.4	7.4	7.5	Teeth moderately worn.
Do	165303	...do	157	143	32	18	37.7	19.6	16.0	10.6	22.5	6.6	6.3	Do.
Do	165304	Female	169	159	34	19	39.6	21.9	17.8	11.6	24.7	7.3	7.3	Teeth much worn.
Do	165305	...do	165	169	35	17	38.8	21.2	16.7	11.7	24.5	7.3	7.2	Teeth moderately worn.
Do	165306	...do	163	162	34	18	38.3	20.8	16.8	11.2	23.8	7.1	7.4	Do.
Lialo	165301	...do	158	163	34	15	38.2	20.4	16.2	11.5	23.8	7.5	7.3	Do.
Kisingo	165299	Male	163	170	36	.....	38.7	20.3	16.8	11.5	24.2	7.2	7.2	Do.
Do	165300	...do	169	178	35	16	38.4	19.9	16.8	11.4	23.8	7.3	7.2	Do.
Do	165298	Female	153	158	34	18	36.7	20.4	15.3	11.3	22.8	7.1	7.2	Do.
B. E. A.: Kaimosi	183925	...do	140	168	33	20	37.5	20.2	16.2	11.3	23.3	7.2	7.2	Do.
T. nigrita.														
B. E. A.: Kisimbiri	165294	...do	142	140	32	14	32.4	.....	13.8	10.1	19.2	6.8	6.8	Do.
T. macropus.														
Uganda:														
Nimule	165291	...do	140	142	35	20	34.0	18.7	13.7	10.2	21.6	6.9	7.0	Teeth little worn.
Do	165292	...do	165	162	34	21	38.7	21.7	16.5	11.3	24.2	7.3	7.4	Teeth considerably worn.
Do	165293	...do	150	145	36	21	36.2	19.2	14.5	11.1	21.4	7.2	7.1	Teeth moderately worn.
Lombeki River	165309	...do	137	136	33	.....	35.7	18.1	15.2	11.0	21.6	7.0	7.0	Do.
Ledgus	165307	...do	160	162	34	.....	37.4	20.0	16.2	11.3	23.4	6.8	6.9	Do.
T. robusta.														
Sudan: Naikhala	141501	Male	123	170	33	17	33.0	18.1	15.7	10.4	19.9	5.9	5.4	Do.
T. b. varia.														
B. E. A.:														
So. Guaso Nyiro River	[1]162249	...do	169	239	43	.....	42.0	24.0	19.7	11.4	26.8	7.6	7.3	Teeth much worn.
Do	162251	...do	163	227	43	.....	38.7	23.1	17.3	11.4	25.4	7.4	7.3	Teeth moderately worn.
Do	162253	...do	168	.....	43	.....	39.6	23.3	17.5	11.1	25.5	7.2	7.0	Do.
Do	162259	Female	185	227	44	.....	41.5	23.9	18.6	11.5	27.4	8.3	7.6	Teeth much worn.
Do	162269	...do	170	228	43	.....	41.0	24.4	17.9	11.5	26.8	7.3	7.3	Do.
Do	162272	...do	192	236	44	.....	41.7	24.7	18.9	11.9	27.7	7.8	7.3	Do.

[1] Type.

The single odd skull from Rhino Camp, Lado, is younger than any specimen from Uganda, but appears to represent the same form. It is really of little importance except to prove the presence of some species of *Tatera* at that locality. A form of the *liodon* group has been described by Thomas from the upper Welle River, Congo, as *Tatera dichrura*.[1] This locality is comparatively near to Lado, but is in the Congo drainage and it is probably doubtful if *dichrura* extends into the Nile watershed at Rhino Camp, although certain large mammals cross the low divide.

It would not be surprising, in view of the close resemblance, if the form here under consideration was found eventually to intergrade with *Tatera liodon smithi* along the east side of Albert Nyanza.

TATERA ROBUSTA (Cretzschmar).

1826. *Meriones robustus* CRETZSCHMAR, Atlas Reise nördl. Afrika von Rüppell, vol. 1, p. 75, pl. 29, fig. *b*. (Ambukol, Sudan; type in Frankfort Museum.)
1902. *Tatera robustus* ANDERSON, Zool. Egypt, Mamm., p. 265.
1905. *Tatera robustus* SCHWANN, Nov. Zool., vol. 12, p. 2. January.
1906. *Tatera robusta* WROUGHTON, Ann. and Mag. Nat. Hist., ser. 7, vol. 17, p. 494. May.

Specimen.—One, as follows:
SUDAN: Naikhala (Rothschild).

TATERA BÖHMI VARIA Heller.

Plate 12.

1910. *Tatera varia* HELLER, Smithsonian Misc. Coll., vol. 56, No. 9, p. 1. July 22. (Southern Guaso Nyiro River, British East Africa; type in U. S. Nat. Mus.)
1910. *Tatera varia* ROOSEVELT, African Game Trails, Amer. ed., pp. 472, 476; London ed., pp. 484, 488.

Specimens.—Thirty, including one in alcohol, as follows:
BRITISH EAST AFRICA: Southern Guaso Nyiro River (Loring, Heller).

This splendid series contains specimens of all ages from young in the first pelage to old adults. The juvenile coat is dark and glossy, much darker than in adults; this is followed by a paler post-juvenile pelage of dull grayish buff which is quite different from the brighter coat of adults. The species belongs to the subgenus *Gerbilliscus*.

Lives in the open plains, among the grass; not among bushes, nor at foot of hills. Lives in burrows, one animal apparently having several, each burrow with a little mound at the entrance. Nocturnal. (Roosevelt, African Game Trails, Amer. ed., p. 476.)

Genus LOPHIOMYS Milne-Edwards.

1867. *Lophiomys* MILNE-EDWARDS, L'Institut, vol. 35, p. 46. February 6. (*L. imhausii.*)
1867. *Phractomys* PETERS, Zeitsch. Naturw. Halle, vol. 29, p. 195. February. (*L. æthiopicus.*)

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 147. August, 1915.

Although a few specimens of the maned rat find their way into collections from time to time, the animal is still so rare that no suitable series are available for study. If all the collections in various museums were combined it would still be impossible to form any correct idea of the relationships of the named forms, and it will doubtless be many years before sufficient material has accumulated. All the forms known from British East Africa are represented in our collection, with the exception of *Lophiomys testudo* Thomas from Ravine Station, the type-specimen of which remains to this date unique.

For measurements of specimens of *Lophiomys* see table, page 39.

LOPHIOMYS BOZASI Oustalet.

1902. *Lophiomys bozasi* Oustalet, Bull. Mus. Hist. Nat. Paris, 1902, p. 400. (Goba, southern Abyssinia; type in Paris Museum.)

1910. *L[ophiomys] bozasi* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p 223. August.

Specimen.—One, as follows:

Abyssinia: Let Marefia, Shoa (Ragazzi).

Mr. Thomas believes that this form will prove to be identical with *L. æthiopicus* Peters, the type-specimen of which came from Maman, Sudan.

LOPHIOMYS THOMASI Heller.

Plate 14.

1912. *Lophiomys thomasi* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 4. July 5, 1912. (Mount Gargues, Mathews Range, British East Africa, 6,000 feet; type in U. S. Nat. Mus.)

Specimens.—Three, as follows:

British East Africa: Mount Gargues (Heller).

Heller records the stomach contents of one specimen as leaves and seeds; of the two others leaves only.

This is a distinct species, with a much smaller skull than the neighboring forms, *bozasi* on the north and *hindei* on the south.

According to Heller's notes these three specimens were caught in rock crevices above permanent water in an old creek bed in rank, weedy vegetation. The two females were quite gentle and could be stroked after taken from the traps. They were slow and dazed in their movements but when disturbed made a series of faint puffs or sneezes, apparently to alarm the aggressor. The old male, however, bit savagely when irritated and made a coughy, sneezy bark when angry. Held by the tail they were unable to turn up and bite. Heller believes these *Lophiomys* to be strictly rock-dwellers, notwithstanding reports of their living in holes of trees. His captive specimens were apparently unable to climb and when placed in the fork of a tree soon fell out.

LOPHIOMYS IBEANUS IBEANUS Thomas.

Plate 2.

1910. *L[ophiomys] ibeanus* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, pp. 223 and 224. August. (Mile 513, Uganda Railway, between Londiani and Lumbwa stations, Mau region, British East Africa; type in British Museum.)

1910. *L[ophiomys] ibeanus ibeanus* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 223. August.

1912. *Lophiomys ibeanus* Baker, Smithsonian Misc. Coll., vol. 59, No. 9, p. 1, pl. 1. May 17.

Specimens.—Three, from localities as follows:

British East Africa: Naivasha Escarpment, 1 (Heller) Nakuru, 2, including one with complete skeleton (Goldfinch).

The two specimens from Nakuru were obtained alive by Mr. A. B. Baker of the National Zoological Park from Mr. G. H. Goldfinch, Assistant Game Warden of British East Africa. Mr. Baker has published some notes on these specimens, from which I extract the following:[1]

This species of *Lophiomys* occurs in the higher part of British East Africa and is known only to the Wandorobo, a tribe of expert hunters, who explore every corner of the forests. Mr. Goldfinch was well aquainted with the game of that region and with its animals generally, but this one he knew only from descriptions given by the natives. At his urgent request they secured two specimens in the forest near Nakuru, at about 8,000 feet altitude. These he forwarded to Nairobi, whence they were shipped with the collection of animals which had been presented to the Park by Mr. W. N. McMillan of that place. One died at Port Said, while on the way to America, and the other came through safely.

Mr. Goldfinch states that *Lophiomys* is arboreal and lives in the thick forest of the high country, feeding on leaves and tender shoots, also that the natives are averse to handling the animal, believing its bite to be poisonous. It is, he says, "very rare or only got by accident here." In captivity it eats cabbage, sweet potatoes, and other vegetables, and is especially fond of sweet potato leaves and the endive salad plant. It is strictly nocturnal, and its slow movements are very suggestive of the Canada porcupine (*Erethizon dorsatus*).

From Heller's experience with *Lophiomys thomasi* and the fact that the Naivasha Escarpment specimen of *L. ibeanus* was snared in the rocks, on hyrax runways on a cliff, it seems probable that the story of the arborial habits of *Lophiomys* is a myth.

LOPHIOMYS IBEANUS HINDEI Thomas.

1910. *L[ophiomys] i[beanus] hindei* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 223. August. (Mutaragwa, Aberdare Mountains, British East Africa; type in British Museum.)

Specimen.—One skull as follows:

British East Africa: West side of Mount Kenia at 8,500 feet (Loring).

[1] Smithsonian Misc. Coll., vol. 59, No. 9, p.2. May 17, 1912.

EAST AFRICAN MANED RAT.

FOR EXPLANATION OF PLATE SEE PAGE 171.

Measurements of specimens of Lophiomys.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Skull: Condylobasal length.	Greatest breadth.	Median length nasals.	Mastoid breadth.	Interorbital breadth.	Mandible.	Upper tooth row, alveoli.	Lower tooth row, alveoli.	Condition of teeth
L. bozasi.														
Abyssinia:														
Let Marefia	25465	Male	.....	.....	.....	66	41.9	24.7	25.8	.....	41.7	14.1	13.1	Moderately worn.
L. thomasi.														
B. E. A.:														
Mount Gargues	[1] 181789	...do	270	165	41	58	37.1	20.4	22.3	14.4	36.3	13.2	11.8	Do.
Do	184114	Female	275	155	44	54	35.4	19.7	21.9	13.6	36.2	12.8	12.8	Little worn.
Do	184115	...do	.....	.....	.....	54	36.7	18.4	22.5	13.2	36.1	13.2	12.5	Do
L. i. ibeanus.														
B. E. A.:														
Nakuru	155360	Male	292	215	51	61	39.5	22.8	22.7	14.8	39.6	12.9	12.4	Moderately worn.
Do	172694	...do	.....	.....	.....	60	39.1	22.1	23.5	14.8	40.7	13.5	12.8	Do.
Naivasha Escarpment	164571	...do	.....	.....	.....	60	.....	21.4	21.8	14.0	38.8	12.8	12.2	Do.
L. i. hindei.														
Mount Kenia	200952	.....	.....	.....	.....	.....	41.1	.....	.....	16.1	.....	12.8	.....	Do.

[1] Type.

On account of its large size I have referred this specimen to *hindei*, although I quite agree with Doctor Lönnberg's statement that "it appears hardly possible to maintain *L. i. hindei* as a subspecies as it only differs in size,"[1] and the specimen recorded by him from the Mau Escarpment (the type region of *ibeanus*) exceeds in cranial dimensions the type of *hindei*. The large masseteric knob which has been given as a specific character of *ibeanus* is characteristic of the old male, and is wanting in young adult male and adult female skulls in our collection. Sufficiently large series of skulls of *Lophiomys* to work out the ordinary individual variation and the increase in size with age are greatly desired.

Family RHIZOMYIDÆ.

Genus TACHYORYCTES Rüppell.

[1835.] *Tachyoryctes* Rüppell, Neue Wirbelth. Fauna Abyssinien gehorig. Säug., p. 35. 1835–1840. (*T. splendens.*)

1843. *Chrysomys* Gray, List Mamm. British Museum, p. 150. (*T. splendens.*)

The United States National Museum collection contains eight forms of the East African mole-rat. While these are all closely related species, all have constant characters of differentiation, and intergradation between any two of them is not indicated by this material. There is in no case any doubt as to where any given specimen should be listed. When collections have been made over all parts of British East Africa and Abyssinia numerous forms will doubtlessly be connected by complete chains of intergrades and the final monographer of the genus will be obliged to reduce many of the named forms to the rank of subspecies. Six currently recognized forms are not represented in our collection. These are *splendens* Rüppell, 1835, and *macrocephalus* Rüppell, 1845, from Abyssinia; *annectens* Thomas, 1891, doubtfully from Lake Naivasha; *badius* and *storeyi* Thomas, 1909, from Eldoma Ravine and Lake Elmenteita, British East Africa; and *somalicus* Osgood, 1910, from Somaliland. The species described by Thomas in 1891, *annectens*, is larger than any form in our collection excepting *rex* of Mount Kenia; its type locality seems to be in question, but the specimen on which the name is based is supposed to have been collected somewhere in the vicinity of Lake Naivasha. All of our specimens from Lake Naivasha belong to a much smaller species described by Thomas in 1909 from the same region.

The examination of large series of specimens of *Tachyorctes* proves the utter lack of value of certain skull characters which have ordinarily been used in diagnosing new species. The shape of the nasal bones, for example, is so variable that skulls in almost any series exhibit the entire range of variation usual in the genus. The presence

[1] Kungl. Sv. Vet. Akad. Handl., vol. 48, No. 5, p. 101. 1912.

of conspicuous concavity, or a sharply marked reentrant curve on the outer lateral margin is purely individual and is not even an average character of value in differentiating forms.

Skins of females average darker than those of males in all species of mole-rats represented in the United States National Museum collection except *Tachyoryctes spalacinus*.

In the table of measurements of specimens of this genus, dimensions of old adult examples only are given, the oldest animals in each series having been selected for this purpose. The majority of specimens in collections are rather young.

TACHYORYCTES RUDDI Thomas.

1909. *Tachyoryctes ruddi* THOMAS, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 546. December. (Kirui, Mt. Elgon, British East Africa; type in British Museum.)

Specimens.—Thirty-seven, as follows:

BRITISH EAST AFRICA: Kaimosi, 2 in alcohol (Heller); Kakumega, 32 (Heller); Lukosa River, 3 (Heller).

This is the darkest species of *Tachyoryctes* in the collection. All of the young examples are intense black and a large proportion of the fully adult specimens are very dark blackish-brown or nearly black. As with other forms the females average darker than the males. Two nursing young were collected at Kakumega, February 16. Two adult females from the same place, February 15 and 16, each contained one embryo.

TACHYORYCTES REX Heller.

Plate 15.

1910. *Tachyoryctes rex* HELLER, Smithsonian Misc. Coll., vol. 56, No. 9, p. 4. July 22. (Western slope of Mount Kenia, 10,000 feet; type in U. S. Nat. Mus.)

1910. *Tachyoryctes rex* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 485; London ed., pp. 485, 496.

Specimens.—Forty-nine, as follows:

BRITISH EAST AFRICA: Mount Kenia, west side, 49, including 2 in alcohol (Loring, Mearns).

These specimens were all collected at an altitude of from 9,000 to 10,700 feet. Mr. Heller says:

> This is an extremely abundant species on Mount Kenia, where it inhabits a narrow zone at the upper edge of the bamboo forest where the moorland country first makes its appearance. The species is not found immediately below this area in the bamboo or yew forests, but another species appears on the grassy plains at the base of the mountain.[1]

Mr. Loring, who collected most of the specimens, has the following note on *Tachyoryctes* in Colonel Roosevelt's African Game Trails:[2]

> Mole-rat mounds were common about the West Kenia Forest Station, but none were seen between 7,500 and 8,500 feet, and from this altitude they ranged to 11,000 feet.

[1] Smithsonian Misc. Coll., vol. 56, No. 9, p. 4. July 22, 1910.

[2] Appendix C, pp. 485, 486. 1910.

They inhabited all of the open grassy plots in the bamboo belt and in the open timber. The 'boys' snared many in nooses ingeniously placed in the runs that were opened and closed after the trap was set. While digging into the burrows, several times I found bulky nests of dried grass in side pockets just off the main runway. Most of them were empty, but one was filled with the animals' droppings.

This large, fluffy-haired mole-rat is obviously closely related to *Tachyoryctes audax* of the Aberdare Range, but exceeds the latter greatly in dimensions. The colors are much the same in the two species, but adult skulls of *rex* are very much larger than skulls of *audax*. There is more than ordinary difference in size of skulls of the sexes; female skulls are much smaller. Young examples are usually quite blackish and often have irregular blotches of white on the underparts. Loring records a female with one large embryo, October 5. Doctor Mearns notes the color of the iris as dark grayish brown.

The excellent series of forty-seven skulls of this species shows to good advantage the change in size of the teeth with age. A long suite of skulls having been laid out according to age, as judged by various characteristics of the skull and teeth, it is seen that there is a great change in the crown area of the molars during the animal's life. At first the actual crown area is small; it gradually increases in size with wear until a maximum is reached at about the time the external reentrant angle disappears from the pattern. There is then a gradual decrease in crown area; when old age is reached the size of the tooth again appears to be about as in the young adult period. In describing new forms as "smaller toothed" or "larger toothed," material should be compared with specimens of exactly the same age.

TACHYORYCTES SPALACINUS Thomas.

1909. *Tachyoryctes spalacinus* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 547. December. (Embi, near Mount Kenia, British East Africa; type in British Museum.)

Specimens.—Forty-one, from localities as follows:

British East Africa: Nyeri, 1 (Loring); two day's journey east of Nyeri, 1 (T. Roosevelt); Wambugu, 39, including 1 in alcohol (Loring, Mearns).

As in related species all skins of very young animals in this series are wholly black. There is little or no average difference in the color of the sexes in our series of *spalacinus;* the species differs in this respect from all other forms of *Tachyoryctes* represented in the United States National Museum collection. The species is a handsome one, rich and dark in color. The skin of one old adult male is entirely black, like the skins of young animals. A conspicuous specific skull character is found in the upper incisors, which protrude far forward.

Mearns records the mammæ as $\frac{2}{2}-\frac{0}{0}-\frac{2}{2}=4$ pairs.

TACHYORYCTES AUDAX Thomas.

1910. *Tachyoryctes audax* THOMAS, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 421. May. (Aberdare Range, British East Africa, 10,000 feet; type in British Museum.)

Specimens.—Twenty-two, as follows:

BRITISH EAST AFRICA: Aberdare Mountains, summit, 11,000 feet, 15 (Heller); Aberdare Mountains, 9,100 feet and 10,500 feet, 3, including one in alcohol (Heller); Changongorra, Aberdare Range, 1 (Heller); Mayo River, 3 (Heller).

This large, pale mole-rat looks much like *Tachyoryctes rex* of Mount Kenia, but is smaller. In the series of 21 skins there are only two blackish specimens, both of which are young.

TACHYORYCTES NAIVASHÆ Thomas.

1909. *Tachyoryctes naivashæ* THOMAS, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 547. December. (Lake Naivasha, British East Africa; type in British Museum.)

1910. *Tachyoryctes annectens* ROOSEVELT, African Game Trails, Amer. ed., p. 473; London ed., p. 485. (Not of Thomas.)

1910. *Tachyoryctes splendens ibeanus* ROOSEVELT, African Game Trails, Amer. ed., p. 485; London, ed., p. 496. (Not of Thomas.)

Specimens.—Eighty, from the following localities:

BRITISH EAST AFRICA: Deep Dale, Loita Plains, 1 (Heller); Kabalolot Hill, 1 (Heller); Kijabe, 9, including eight odd skulls (Heller, Mearns); Lake Naivasha, 32, including 3 in alcohol (Loring, Mearns, Heller); Loita Plains, 4 in alcohol (Heller); Naivasha Station, 17 (Loring, Mearns); Oljoro O Nyon, 7 (Loring); Salt Marsh, Sotik, 1 skull (Heller); Sibi River, Southern Guaso Nyiro, 1 (Heller); Suswa Plains, 7 (Heller).

Specimens from Sotik and the Southern Guaso Nyiro do not differ appreciably from specimens collected around Lake Naivasha. Mr. Dollman has recorded *naivashæ* from Lemek Valley.[1]

No example from this large series approaches in size the type of *Tachyoryctes annectens* (Thomas).[2] No definite type locality for *annectens* has ever been fixed so far as I can discover. In the original diagnosis the habitat is given as "either Masai-land or inland British East Africa." Specimens accompanying the type were labelled as collected at Mianzini, just east of Lake Naivasha, and this place has evidently been considered the type region by Thomas in later subdivision of the genus,[3] but I do not find that any later specimens have been referred to *annectens*. In all the United States National Museum collection of *Tachyoryctes* the only specimens which approach in size the type of *annectens* are the larger males of *T. rex* from Mount Kenia. There is an extraordinary difference in size of skulls

[1] Proc. Zool. Soc. London, 1914, p. 317. June, 1914.

[2] *Rhizomys annectens* Thomas, Ann. and Mag. Nat. Hist., ser. 6, vol. 7, p. 304, March, 1891; Proc. Zool. Soc. London, 1891, p. 186.

[3] Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 547. December, 1909.

between sexes in *T. naivashæ*, but the largest males fall far short of the dimensions given for the type skull of *annectens*.

Skins of females from Naivasha Station average darker than females from the south end of Lake Naivasha. Only one blackish skin is present in the large series of *naivashæ* examined; the color is very uniform throughout the lot, except for the usual sexual difference, females averaging noticeably darker than males.

Loring furnished the following notes on this species for African Game Trails: [1]

Some 15 miles west of Lake Naivasha mole rats became common, and on the sandy flats within 5 miles of the lake they were so abundant that our horses broke into their runways nearly every step. Their underground tunnels and the mounds of earth that were thrown out were similar to those made by the pocket gophers of the western United States. Many were snared by the porters and brought to camp alive. They would crawl about slowly, not attempting to run away, but looking for a hole to enter. After the lapse of a few seconds they would begin to dig. In any slight depression they began work, and when small roots of a tussock of grass intervened, they used their teeth until the obstruction was removed, and then with the nails of their front feet only, continued digging. As the hole deepened they threw the dirt out between their hind legs and with them still further beyond. After the earth had accumulated so that it drifted back they faced about, and using their chest as a scoop, pushed it entirely out of the way. They were most active in the evening, at night, and in early morning. Several were found dead near their holes, having evidently been killed by owls or small carnivorous mammals.

TACHYORYCTES IBEANUS Thomas.

1900. *Tachyoryctes splendens ibeanus* Thomas, Proc. Zool. Soc. London, 1900, p. 179. June 1. (Machakos, British East Africa; type in British Museum.)

1910. *Tachyoryctes splendens ibeanus* Roosevelt, African Game Trails, Amer. ed., pp. 473, 479; London ed., pp. 485, 490.

Specimens.—Fifty-five, as follows:

British East Africa: Kyambu, 3 native skins (Loring); Nairobi, 52, including 13 in alcohol (Mearns, Loring.)

This species shows the maximum difference in color between adult males and females; the females are very much darker. Several skins have large, irregular white blotches on the underparts. Very young specimens are usually entirely black.

TACHYORYCTES DÆMON Thomas.

1892. *Rhizomys splendens* True, Proc. U. S. Nat. Mus., vol. 15, p. 464. (Not of Rüppell.)

1909. *Tachyoryctes dæmon* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 545. December. (Mount Kilimanjaro, East Africa, 5,000 feet; type in British Museum.)

Specimens.—Seven, as follows:

German East Africa: Marangu, Mount Kilimanjaro, 6 (Abbott); Mount Kilimanjaro, 5,000 feet, 1 (Abbott).

[1] Roosevelt, African Game Trails, Appendix C, p. 485. 1910.

Measurements of specimens of Tachyoryctes.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Skull: Condylobasal length.	Zygomatic breadth.	Length of nasals.	Greatest breadth of nasals.	Length of bulla.	Mandible.	Upper tooth row, alveoli.	Lower tooth row, alveoli.	Observations.
T. ruddi.														
B. E. A.:														
Kakumega	184119	Male	180	70	27	45	29.7	16.6	6.1	10.2	30.9	8.7	9.5	Basal suture obliterated.
Do	184131	...do	190	78	29	46	33.0	19.1	6.3	10.6	32.9	8.4	9.3	Do.
Do	184146	...do	190	73	28	44	32.2	17.9	6.4	10.4	30.9	9.3	10.6	Do.
Do	184149	...do	190	57	26	45	31.0	17.0	5.9	9.9	31.6	9.8	10.3	Do
Do	184120	Female	190	76	29	46	32.0	18.1	5.8	10.8	31.8	8.6	10.0	Do.
Do	184132	...do	185	73	28	45	31.4	16.7	5.5	9.5	30.1	9.7	10.3	Do.
Do	184135	...do	180	70	27	44	30.2	17.5	5.8	9.7	30.9	9.8	9.8	Do.
Do	184147	...do	170	68	28	44	31.0	17.0	5.7	9.5	31.4	8.3	9.8	Do.
T. rex.														
B. E. A.:														
Mount Kenia	[1] 163088	Male	232	59	31	54	38.6	21.9	7.1	11.9	38.1	10.2	12.2	Basal suture open.
Do	163862	...do	225	68	31	53	37.8	20.6	6.7	11.5	37.3	11.1	12.6	Do
Do	163866	...do	252	68	32	54	37.5	22.5	7.3	12.4	37.1	10.3	11.9	Basal suture obliterated.
Do	198016	...do	235	70	30	53	37.5	22.3	6.8	11.7	36.0	9.7	10.9	Do.
Do	198017	...do	257	75	32	57	.....	24.0	7.6	12.2	39.4	11.3	12.2	Do.
Do	198018	...do	268	80	31	56	38.1	.....	8.3	12.4	38.8	10.6	12.0	Do.
Do	198019	...do	251	68	33	54	37.5	22.5	7.3	10.9	36.3	10.2	11.8	Do.
Do	163864	Female	229	68	29	51	36.4	20.0	6.3	10.6	35.8	10.3	13.0	Basal suture open.
Do	163868	...do	233	64	30	52	.....	19.1	6.1	12.0	36.7	10.5	12.6	Basal suture obliterated.
Do	163871	...do	233	63	30	49	.....	19.0	6.3	11.5	31.5	10.6	11.5	Do.
Do	163873	...do	233	68	32	51	35.2	20.1	6.6	11.5	36.1	11.2	12.7	Basal suture closed.
Do	163877	...do	227	64	31	52	34.8	20.0	6.5	10.9	36.5	11.0	12.7	Do.
Do	163892	...do	222	69	31	50	.....	19.5	7.1	11.4	35.1	10.5	12.4	Do.
Do	163901	...do	224	54	31	47	33.6	18.3	5.4	9.8	32.8	10.4	11.4	Basal suture obliterated.

[1] Type.

Measurements of specimens of Tachyoryctes—Continued.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Skull: Condylobasal length.	Zygomatic breadth.	Length of nasals.	Greatest breadth of nasals.	Length of bulla.	Mandible.	Upper tooth row, aveoli.	Lower tooth row, aveoli.	Observations.
B. E. A.: *T. spalacinus.*														
Wambugu	163835	Male	224	64	28	47	32.6	17.5	6.0	10.3	31.2	8.7	9.8	Basal suture obliterated.
Do	163841	do	227	72	30	48	31.7	17.8	6.2	10.3	31.9	9.1	9.9	Basal suture open.
Do	163856	do	235	80	30	52	33.9	19.5	6.5	11.8	35.2	9.0	9.7	Basal suture obliterated.
Do	163904	do	235	63	30	49	33.2	18.4	6.4	9.9	32.5	9.4	9.8	Basal suture closed.
Do	163908	do	224	57	29	48	32.7	17.2	6.0	10.6	31.6	8.8	9.7	Basal suture open.
Do	163879	Female.	230	66	31	48	32.5	19.3	6.2	10.9	32.2	8.9	10.1	Basal suture closed.
Do	163903	do	225	58	29	46	.....	17.2	6.0	10.6	.....	8.2	.....	Basal suture obliterated.
B. E. A.: *T. audax.*														
Aberdare Mountains	163776	Male	225	65	.....	51	36.3	21.5	7.8	10.5	34.5	10.1	10.8	Basal suture closed.
Do	184157	do	200	63	28	48	33.5	20.4	6.4	10.4	32.6	10.3	10.3	Basal suture open.
Do	184161	do	215	78	30	53	36.0	22.0	7.8	11.0	35.7	10.1	10.8	Basal suture obliterated.
Do	184163	do	205	61	28	50	35.0	21.2	7.2	11.1	33.2	10.4	10.9	Do.
Do	163775	Female.	215	69	28	47	32.7	17.5	6.2	11.7	32.1	9.8	10.3	Basal suture closed.
Do	184158	do	180	63	28	44	32.5	17.3	5.6	10.4	30.5	9.7	10.3	Basal suture open.
Do	184162	do	205	66	29	49	34.8	20.1	7.3	10.8	33.2	10.5	11.8	Do.
Do	184165	do	220	68	30	49	35.0	20.1	6.8	10.6	33.6	10.1	10.8	Do.
Do	184168	do	220	.....	28	46	34.1	18.3	6.3	10.3	32.0	10.6	11.2	Basal suture obliterated.
B. E. A.: *T. naivashæ.*														
Lake Naivasha	162769	Male	220	69	29	50	33.9	19.2	6.9	10.4	32.7	8.8	9.8	Basal suture open.
Do	162770	do	215	72	29	50	34.6	19.5	6.5	10.8	33.8	9.6	10.4	Basal suture closed.
Do	162772	do	216	79	29	49	34.8	20.2	6.6	10.2	33.1	9.7	10.7	Do.
Do	162776	do	191	73	29	48	33.9	18.0	6.6	11.0	32.1	8.8	10.3	Do.
Do	162790	do	228	75	29	51	34.6	18.3	6.8	11.2	35.0	9.2	10.7	Basal suture obliterated.
Naivasha Station	162817	do	220	95	29	49	33.7	18.3	5.9	11.0	33.3	10.0	10.8	Do.
So. Guaso Nyiro	181608	do	190	75	30	48	33.3	17.7	6.0	10.8	32.1	9.4	9.8	Do.
Suswa	181610	do	210	60	28	48	34.2	17.3	5.9	12.2	33.0	9.3	10.5	Do.

Do	181612	...do....	200	54	26	46	31.6	15.8	5.8	10.3	29.0	9.3	9.6	Do.
Lake Naivasha	162773	Female.	205	63	28	46	32.3	17.3	5.4	10.0	30.8	9.0	10.0	Basal suture closed.
Do	162777	...do....	188	53	28	42	29.9	16.4	5.8	10.2	28.3	9.1	9.9	Do
Do	162778	...do....	187	64	25	44	29.8	17.2	5.3	9.5	30.5	9.0	9.5	Do.
Do	162779	...do....	192	71	28	45	31.5	17.1	5.5	10.9	30.6	9.3	9.9	Do.
Do	162795	...do....	190	64	26	45	.....	15.9	5.4	10.4	29.0	9.9	11.0	Basal suture obliterated.
Naivasha Station	162803	...do....	195	56	26	44	30.4	16.7	5.3	9.5	31.1	8.7	9.4	Basal suture closed.
Do	162805	...do....	200	61	26	46	33.1	18.0	6.3	10.8	31.3	9.4	10.3	Basal suture obliterated.
Do	162816	...do....	190	66	26	44	32.0	16.2	5.3	10.2	29.3	9.0	10.1	Basal suture open.
Oljoro O Nyon River	162764	...do....	195	55	27	42	30.5	15.8	5.7	9.8	28.7	8.8	9.4	Basal suture closed.
B. E. A.: *T. ibeanus.*														
Nairobi	163791	Male....	220	73	30	46	32.3	18.2	6.3	11.1	30.8	8.5	9.4	Basal suture obliterated.
Do	163807	...do....	209	63	29	47	31.8	18.9	6.1	10.3	31.3	8.7	9.5	Do.
Do	163811	...do....	197	65	26	43	30.8	16.2	6.2	9.5	29.6	8.4	8.7	Basal suture closed..
Do	163812	...do....	206	54	27	46	31.5	16.3	6.3	9.7	30.4	8.3	9.2	Do.
Do	163849	...do....	201	57	30	44	31.9	17.0	6.8	9.3	29.5	8.6	9.8	Do
Do	163780	Female.	186	64	26	40	.....	13.4	5.0	9.3	28.0	8.2	9.0	Do.
Do	163781	...do....	195	70	27	44	31.1	17.9	6.2	9.7	28.9	8.3	8.5	Basal suture obliterated.
Do	163782	...do....	184	61	27	41	30.2	15.9	6.5	9.3	29.1	8.5	9.8	Basal suture closed.
Do	163787	...do....	188	61	27	45	32.0	17.1	5.6	9.4	30.7	8.5	9.4	Do.
Do	163792	...do....	190	60	28	41	28.9	15.7	5.5	9.3	27.6	8.7	9.1	Do.
Do	163803	...do....	.....	.....	28	.....	29.6	15.7	5.6	9.4	28.8	9.1	9.0	Basal suture open.
Do	163809	...do....	188	51	27	41	29.2	15.9	5.8	9.4	28.5	8.3	8.8	Basal suture closed.
Do	163813	...do....	195	59	29	42	28.9	15.1	5.8	9.4	28.6	9.2	9.7	Do.
Do	163851	...do....	181	55	27	39	27.5	13.8	4.5	8.6	27.0	7.9	8.2	Do.
G. E. A.: *T. damon.*														
Marangu	34726	Male....	.....	.....	.....	44	29.7	15.0	5.8	10.3	29.6	9.0	10.1	Basal suture open.
Do	34728	Female.	.....	.....	.....	45	32.3	15.8	5.9	9.8	31.7	9.4	10.2	Basal suture obliterated.
Do	34729	...do....	.....	.....	.....	.....	32.0	15.8	5.4	9.5	31.2	9.4	11.8	Do.
Mount Kilmanjaro	37361	...do....	.....	.....	.....	43	30.4	14.7	6.0	10.2	29.5	8.8	10.4	Basal suture open.
Uganda: *T. azkolix.*														
Burumba	140767	Male....	198	68	28	.....	.....	16.3	5.6	10.2	30.7	8.8	9.6	Teeth moderately worn.
Do	140768	...do....	200	.....	28	42	28.8	17.2	5.6	9.6	29.8	7.4	8.3	Basal suture closed.

TACHYORYCTES ANKOLIÆ Thomas.

1909. *Tachyoryctes ankoliæ* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 545. December. (Burumba, Ankole, southern Uganda; type in British Museum.)

Specimens.—Two, as follows:
Uganda: Burumba, Ankole (Doggett).

Family MURIDÆ.

Genus DENDROMUS Smith.

1829. *Dendromus* Smith, Zool. Journ., vol. 4, p. 438. (*D. mesomelas.*)
1832. *Dendromys* Smuts, Diss. Zool., Mamm. Cap., p. 39.
1916. *Poemys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 18, p. 238. August. (*D. melanotis.*) [Valid as a subgenus.]

Of the 10 species and subspecies of tree mice of this genus listed below, all belong to the typical subgenus *Dendromus* as restricted by Thomas except the black-fronted forms, *nigrifrons* and *spectabilis*. These last two are members of the subgenus *Poemys*, characterized by the presence of a nail, instead of a claw, on the fifth hind toe.

For measurements of specimens of *Dendromus* see table, pages 51–53.

DENDROMUS INSIGNIS INSIGNIS Thomas.

1903. *Dendromys insignis* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 12, p. 341. September. (Nandi, British East Africa; type in British Museum.)
1910. *Dendromys insignis* Roosevelt, African Game Trails, Amer. ed., pp. 472, 477; London ed., pp. 484, 489. (Part.)

Specimens.—Sixty-one, from localities as follows:

British East Africa: Aberdare Mountains, east base and west base, 2 (Heller); Engare Narok River, 1 (Loring); Kaimosi, 50, including 23 in alcohol (Heller); Lake Naivasha, 1 (Loring); Lukosa River, 1 in alcohol (Heller); Naivasha Station, 1 (Loring); Nyeri, 1 (Loring); Ravine Boma, 3, including 2 in alcohol, (Heller); Wambugu, 1 (Loring).

Specimens of *Dendromus insignis* from Naivasha, the Aberdare Mountains, Nyeri, and Wambugu differ from typical specimens from the direct Nyanza drainage in their duller color, thus approaching in that respect skins of *D. i. percivali*. They retain, however, the narrow braincase of true *insignis* and seem best placed with that form. The series from Kaimosi, which is not far from the type locality, shows that the form averages quite bright and reddish in color, although there is considerable individual variation in this respect. The younger examples are much less reddish than skins of old adults.

Although belonging to the genus of tree mice, this large *Dendromys* lives on the ground, seemingly builds no nest, and is most often found in the runways of the *Otomys*. (African Game Trails, p. 477.)

DENDROMUS INSIGNIS PERCIVALI Heller.

Plate 16.

1912. *Dendromus mesomelas percivali* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 5. July 5. (Mount Gargues, Mathews Range, British East Africa; type in U. S. Nat. Mus.)

1914. *Dendromus* sp. Cockerell, Miller, and Printz, Zool. Anz., vol. 44, p. 439. June 23.

Specimens.—Eighty-eight, from the following localities:

British East Africa: Mount Gargues, 3 (Percival); Mount Kenia, west side, 77, including 12 in alcohol (Loring, Mearns); West Kenia Forest Station, 8 (Loring).

This subspecies of the larger striped *Dendromus* is abundant on the Northern Guaso Nyiro drainage of Mount Kenia. I can find no reason for separating the Kenia specimens from the small series of skins and skulls collected in the Mathews Range. They differ from typical *insignis* in the darker, less reddish coloration, longer fur, larger ears, and in the slightly larger braincase. The difference in color of the Kenia form was noted by Doctor Lönnberg in 1912.[1]

Young female skins from Mount Gargues have somewhat blacker ears than any specimen from Kenia, but the ears of adult skins from the two localities are alike in color and I believe the difference shown by the young to be a matter of pelage. Much better series from Mount Gargues are needed.

The specimens from Gargues were collected at altitudes from 6,500 to 7,100 feet. On Kenia, Loring and Mearns trapped this species at numerous collecting stations ranging in altitude from 7,500 feet up to 14,200 feet.

DENDROMUS WHYTEI PALLESCENS Osgood.

1910. *Dendromus whytei pallescens* Osgood, Field Mus. Nat. Hist., Zool. ser., vol. 10, No. 2, p. 7. February. (Ulukenia Hills, British East Africa: type in Field Mus. Nat. Hist., Chicago.)

1910. *Dendromus whytei pallescens* Roosevelt, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

Specimens.—Three, from the following localities:

British East Africa: Fort Hall, 2, including 1 odd skull (Loring); West Kenia Forest Station, 1 in alcohol (Loring).

DENDROMUS WHYTEI CAPITIS Heller.

Plate 16.

1912. *Dendromus whytei capitis* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 6, July 5. (Mount Lololokwi, British East Africa; type in U. S. Nat. Mus.)

Specimen.—One, as follows:

British East Africa: Mount Lololokwi, 6,000 feet altitude, the type (Heller).

[1] Kungl. Svenska Vet. Akad., vol. 48, No. 5, pp. 90, 91. 1912.

DENDROMUS RUDDI Wroughton.

1910. *Dendromus ruddi* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 275. March. (Malikisi, Mount Elgon, British East Africa; type in British Museum.)

Specimens.—Thirty-four, from the following localities:

Lado: Rhino Camp, 1 (Loring).

Uganda: Gondokoro, 1 (Loring); Kajuia, 1 (Loring).

British East Africa: Kaimosi, 31 (Heller, Turner).

The specimen from Rhino Camp is duller in color and has slightly shorter pelage than skins from Kaimosi, but is otherwise indistinguishable from them. The single specimen from Gondokoro is immature, but is like young of same age in the Kaimosi series. The Kajuia (near Hoima) specimen is typical *ruddi*. These three specimens were included by Heller with his *Dendromus lineatus* [1] and account in a great measure for the great variation in the distinctness of the black median dorsal stripe which he attributes to that form.

DENDROMUS OCHROPUS Osgood.

1910. *Dendromus ochropus* Osgood, Field Mus. Nat. Hist., Zool. ser., vol. 10, No. 2, p. 6. February. (Lake Elmenteita, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

Specimens.—Six, as follows:

British East Africa: Naivasha Station (Loring).

Loring notes five embryos in a female captured on July 30 at Naivasha.

A species related to *Dendromus ochropus* has been described from Nairobi by Osgood as *Dendromus nairobæ*.[2] It is not represented in our collection.

DENDROMUS ACRÆUS Wroughton.

1909. *Dendromus acræus* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 541. December. (Kirui, Elgon, British East Africa; type in British Museum.)

Specimens.—Sixty-one, from the following localities:

British East Africa: Aberdare Mountains, west slope at 9,100 feet, 1 in alcohol (Heller); Kaimosi, 58, including 38 in alcohol (Heller); Sirgoit Lake, 2, including 1 in alcohol (Heller)

A female collected at Kaimosi, January 27, contained three embryos.

DENDROMUS LINEATUS Heller.

Plate 16.

1911. *Dendromus lineatus* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 4. February 28. (Rhino Camp, Lado; type in U. S. Nat. Mus.)

Specimens.—Nineteen, including 6 in alcohol, as follows:

Lado: Rhino Camp (Loring).

[1] Smithsonian Misc. Coll., vol. 56, No. 17, pp. 4, 5. Feb. 28, 1911.

[2] Field Mus., Zool. ser., vol. 10, No. 2, p. 7. February, 1910.

Measurements of specimens of Dendromus.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylobasal length.	Zygomatic breadth.	Breadth of braincase.	Length of nasals.	Interorbital breadth.	Length of palatine slits.	Upper tooth row.	Observations.
D. i. insignis.												
B. E. A.:												
Kaimosi	184074	Male	85	110	22.5	12.3	11.0	9.0	3.3	5.5	3.8	Teeth moderately worn.
Do	184075	do	83	101	22.1	11.7	11.5	9.1	3.3	5.2	3.7	Do.
Do	184084	do	85	108	22.2	11.6	10.8	8.8	3.3	5.1	3.8	Do.
Do	184085	do	86	104	21.6	11.6	10.7	8.9	3.2	5.0	3.8	Do.
Do	184090	do	90	103	22.6	12.0	11.0	9.7	3.2	5.2	3.8	Do.
Do	184091	do	80	105	21.4	11.1	10.9	8.9	3.3	4.9	3.8	Teeth little worn.
Do	184080	Female	80	97	21.3	11.6	10.8	8.8	3.2	5.0	3.7	Teeth moderately worn.
Do	184082	do	80	96	21.3	11.5	10.7	8.7	3.3	4.8	3.6	Do.
Do	184089	do	82	98	21.5	11.6	10.8	9.1	3.1	4.8	3.5	Teeth considerably worn.
Ravine Boma	165311	Male	100	117	22.0	11.8	10.8	9.8	3.4	5.2	3.9	Teeth moderately worn.
Nyeri	164421	do	97	110	22.4	11.2	10.9	9.3	3.4	5.4	.....	Do.
Aberdare Mountains	184067	do	85	106	22.3	11.8	10.8	9.7	3.3	5.6	4.0	Do.
D. i. percivali.												
B. E. A.:												
Mount Gargues	[1] 181791	Female	86	105	22.2	11.7	10.9	8.9	3.3	5.3	3.9	Teeth much worn.
Do	184095	do	73	90	20.3	11.9	10.9	8.0	3.5	5.2	3.8	Teeth little worn.
Mount Kenia	164429	Male	91	96	21.6	11.8	11.5	8.9	3.2	5.3	3.8	Teeth moderately worn.
Do	164431	do	88	102	22.1	12.4	11.6	9.7	3.4	5.1	4.0	Do.
Do	164439	do	88	104	21.8	11.8	11.0	9.3	3.5	5.1	3.9	Do.
Do	164440	do	89	109	22.2	11.5	11.0	9.5	3.3	5.6	4.0	Do.
Do	164382	Female	81	113	21.2	11.8	11.3	8.8	3.4	4.9	3.9	Do.
Do	164390	do	84	85	21.8	11.8	11.3	8.8	3.5	4.9	3.9	Do.
Do	164392	do	80	97	21.2	11.4	11.8	9.0	3.3	4.6	4.1	Do.
Do	164408	do	91	102	21.9	11.8	11.1	9.8	3.5	4.8	3.8	Do.
Do	164438	do	79	91	20.9	11.5	11.3	8.8	3.4	4.4	4.0	Do.
Do	164448	do	87	101	20.9	11.8	11.5	9.4	3.2	5.0	3.7	Do.

[1] Type.

Measurements of specimens of Dendromus—Continued.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylobasal length.	Zygomatic breadth.	Breadth of braincase.	Length of nasals.	Interorbital breadth.	Length of palatine slits.	Upper tooth row.	Observations.
D. w. pallescens.												
B. E. A.:												
Fort Hall	165315	Female	.....	.....	15.9	9.5	8.9	6.8	2.7	3.3	3.1	Teeth moderately worn.
Do	164412	...do	65	76	.....	9.2	8.8	7.1	2.7	3.6	3.0	Do.
D. w. capitis.												
B. E. A.: Mount Lololokwi	[1] 181792	...do	60	88	17.7	10.3	9.4	7.1	3.2	3.8	3.3	Do.
D. ruddi.												
B. E. A.:												
Kalmosi	184102	Male	70	100	18.9	10.6	9.8	7.3	3.3	4.1	3.3	Teeth much worn.
Do	184111	...do	70	95	18.8	10.7	9.8	7.6	3.3	3.8	3.2	Teeth moderately worn.
Do	184112	...do	69	99	18.3	10.4	9.6	7.2	3.3	3.4	3.3	Do.
Do	184101	Female	68	92	18.3	10.3	9.6	7.2	3.3	3.8	3.3	Teeth much worn.
Do	184104	...do	60	90	17.3	10.3	9.7	6.7	3.3	3.8	3.2	Teeth little worn.
Do	184108	...do	65	79	17.4	9.7	8.8	7.0	2.6	4.1	3.0	Teeth moderately worn.
Do	184109	...do	67	96	18.2	10.5	9.8	6.9	3.2	3.8	.....	Do.
Do	184113	...do	66	91	18.0	10.4	9.4	7.0	2.7	3.9	3.2	Do.
Uganda: Kajuia	165271	...do	73	.....	17.9	10.1	9.2	7.4	2.6	3.6	3.0	Do.
D. ochropus.												
B. E. A.:												
Naivasha	162360	Male	75	83	.....	10.8	.....	8.6	2.9	4.5	3.3	Do.
Do	162361	...do	75	82	.....	10.8	.....	7.5	2.9	4.3	3.3	Do.
Do	162358	Female	67	89	18.1	10.2	9.5	6.8	2.9	3.9	3.3	Do.
Do	162359	...do	63	79	.....	9.8	.....	7.3	2.7	3.9	3.3	Teeth little worn.
Do	162363	...do	61	78	.....	.....	.....	6.8	2.9	3.7	3.1	Do.
D. acraus.												
B. E. A.:												
Sirgoit	164377	Male	65	72	17.5	10.1	9.4	6.5	2.7	3.7	3.0	Teeth moderately worn.
Kalmosi	184054	...do	62	77	17.3	10.1	9.1	7.3	2.7	3.9	3.3	Do.
Do	184062	...do	65	85	17.7	9.9	9.3	7.3	2.8	3.8	3.1	Do.

Do	184064	...do.....	65	82	17.8	9.9	9.0	7.3	2.5	3.8	3.0	Teeth much worn.
Do	184065	...do.....	70	85	19.2	10.7	9.5	8.0	2.7	4.3	3.1	Do.
Do	184066	...do.....	67	85	18.2	10.2	9.3	7.8	2.7	3.6	3.2	Teeth considerably worn.
Do	184055	Female..	60	73	16.9	9.5	8.6	6.5	2.7	4.0	2.9	Do.
Do	184056	...do.....	59	73	16.7	9.3	8.8	6.8	2.6	3.8	2.9	Teeth moderately worn.
Do	184057	...do.....	60	75	17.3	10.1	9.2	7.2	2.7	3.8	3.1	Teeth considerably worn.
Do	184059	...do.....	58	75	16.7	9.7	9.4	6.8	2.8	3.8	2.9	Teeth moderately worn.
Do	184061	...do.....	65	85	18.4	10.0	9.3	7.1	2.8	3.8	3.1	Teeth much worn.
Do	184063	...do.....	65	84	17.8	9.7	8.9	7.0	2.6	3.9	2.9	Teeth moderately worn.
D. lineatus.												
Lado:												
Rhino Camp	[1] 164816	Male....	65	87	17.8	9.7	8.5	7.2	2.6	3.7	3.0	Do.
Do	165262	...do.....	57	76	16.5	9.4	.....	6.3	2.8	3.8	2.9	Teeth little worn.
Do	165258	Female..	60	76	17.2	9.5	8.8	6.8	2.6	3.7	2.8	Teeth moderately worn.
Do	165260	...do.....	63	81	17.3	10.2	.....	6.8	3.1	3.7	2.9	Do.
Do	165261	...do.....	56	76	16.2	9.2	8.8	6.4	2.7	3.3	2.8	Teeth little worn.
Do	165263	...do.....	70	78	17.1	9.3	8.5	6.8	2.6	3.6	2.8	Teeth moderately worn.
Do	165264	...do.....	65	76	16.6	9.3	.....	6.3	2.8	3.7	2.8	Do.
Do	165265	...do.....	55	71	15.9	9.0	8.4	5.9	2.7	3.5	2.8	Do.
D. n. nigrifrons.												
G. E. A.:												
Mount Kilimanjaro	37367	Male....	.....	.....	.....	.....	9.3	7.4	2.6	4.2	2.8	Do.
Do	[1] 35263	Female..	.....	.....	17.8	9.8	9.3	7.4	2.4	4.3	2.9	Do.
B. E. A.: Kijabe	162354	...do.....	71	73	.....	9.8	.....	7.7	2.7	4.4	3.3	Teeth considerably worn.
D. n. spectabilis.												
Lado:												
Rhino Camp	[1] 164815	...do.....	68	78	19.0	10.3	9.2	8.7	2.7	4.2	3.2	Teeth moderately worn.
Do	165278	...do.....	62	78	18.2	9.7	8.9	7.8	2.6	3.8	3.3	Do.
Do	165279	...do.....	57	72	17.4	9.5	8.9	8.8	2.8	3.9	3.0	Do.
Do	165280	...do.....	59	71	17.4	9.4	9.1	7.3	2.6	4.0	3.1	Do.
Uganda: Butiaba	165274	Male....	63	75	17.9	9.9	8.9	7.5	2.6	4.1	3.1	Do.

[1] Type.

The specimens recorded from Gondokoro and Hoima [1] by Heller at the time of the description of this species have now been referred to *Dendromus ruddi* Wroughton. One of the Rhino Camp specimens proves to belong with the same species. This removes from the series all the specimens with the dorsal stripe obsolete, but there is still considerable variation in the distinctness of this stripe in *lineatus* although most of the adult specimens have it well pronounced.

The three forms of this little group of tree mice, *ochropus*, *acræus*, and *lineatus*, are closely related and are probably intergrading subspecies. The most southern of the three, *ochropus*, is the largest, with largest skull and teeth; *acræus* is medium sized and intermediate in color of the underparts as well as in distribution; *lineatus* is the smallest. For detailed measurements of specimens see page 53.

DENDROMUS NIGRIFRONS NIGRIFRONS True.

Plate 17.

1892. *Dendromys nigrifrons* True, Proc. U. S. Nat. Mus., vol. 15, p. 462. October 26. (Mount Kilimanjaro, German East Africa; type in U. S. Nat. Mus.)

1909. *Dendromys nigrifrons* Lyon and Osgood, Bull. 62, U. S. Nat. Mus., p. 158. January 28.

1910. ?*Dendromys nigrofrons* Roosevelt, African Game Trails, Amer. ed., p. 477; London ed., pp. 488, 489.

Specimens.—Six, from localities as follows:

British East Africa: Kijabe, 1 (Loring).

German East Africa: Mount Kilimanjaro, 5, including 2 in alcohol (Abbott).

The three skins from Kilimanjaro were collected at 5,000 feet. The type is in alcohol, with skull removed. It is uncertain to which form of *Dendromus* the interesting notes published by Colonel Roosevelt at the above reference pertain, as no specimens of the genus were preserved by members of the expedition from Athi Plains or from the Sotik, the two localities mentioned.

DENDROMUS NIGRIFRONS SPECTABILIS Heller.

Plate 17.

1911. *Dendromus spectabilis* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 3. February 28. (Rhino Camp, Lado Enclave; type in U. S. Nat. Mus.)

Specimens.—Fourteen, from the following localities:

Lado: Rhino Camp, 13, including 4 in alcohol (Loring, Mearns).

Uganda: Butiaba, 1 (Heller).

This form is very much like typical *nigrifrons*, but has the underparts less buffy. I can see no difference in the color of the feet in the two forms.

[1] The specimen is labeled "Kajuia."

Genus STEATOMYS Peters.

1846. *Steatomys* PETERS, Ber. Königl. Preuss. Akad. Wiss., Berlin, p. 258. (*S. pratensis.*)

The fat mouse is rare in British East Africa if one can judge its abundance from the number of specimens which have been recorded in print. The Smithsonian African Expedition procured the only specimens in our collection, and these are few in number.

STEATOMYS ATHI Heller.

Plate 17.

1910. *Steatomys athi* HELLER, Smithsonian Misc. Coll., vol. 54 (No. 1924), p. 3. February 28. (Ulukenia Hills, Athi Plains, British East Africa; type in U. S. Nat. Mus.)

1910. *Steatomys athi* ROOSEVELT, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

Specimens.—Four, including one in alcohol, as follows:

BRITISH EAST AFRICA: Ulukenia Hills (Loring).

Genus ZELOTOMYS Osgood.

1910. *Zelotomys* OSGOOD, Field Mus. Pub. Zool., vol. 10, No. 2, p. 7. February. (*Z. hildegardex.*)

The two subspecies of this "broad-headed" mouse listed below are closely related, and their distinctness can not be considered as certain until more material is studied. In the original diagnosis of the genus, Mr. Osgood erroneously stated that the molars are more hypsodont than in "*Mus*" (=*Rattus*); as a matter of fact they are even lower crowned. Mr. Thomas has already corrected the mammary formula to 3–2=10.[1]

For measurements of specimens see page 56.

ZELOTOMYS HILDEGARDEÆ HILDEGARDEÆ (Thomas).

1902. *Mus hildegardex* THOMAS, Ann. and Mag. Nat. Hist., ser. 7, vol. 9, p. 219. March. (Machakos, British East Africa; type in British Museum.)

1910. *Zelotomys hildegardex* OSGOOD, Field Mus. Pub. Zool., vol. 10, No. 2, p. 7. February.

1910. *Zelotomys hildegardæ* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 478; London ed., pp. 485, 489.

Specimens.—Two, as follows:

BRITISH EAST AFRICA: Juja Farm, 1 (Loring); Kapiti Plains, 1 (Loring).

ZELOTOMYS HILDEGARDEÆ VINACEUS Heller.

Plate 18.

1912. *Zelotomys hildegardæ* (sic) *vinaceus* HELLER, Smithsonian Misc. Coll., vol. 59, No. 16, p. 10. July 5. (Ndi, Mount Mbololo, Taita Hills, British East Africa; type in U. S. Nat. Mus.)

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 481. December, 1915.

Measurements of specimens of Zelotomys from British East Africa.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylobasal length.	Zygomatic breadth.	Mastoid breadth.	Length nasals.	Length mandible.	Upper tooth row.	Condition of molar teeth.
Z. h. hildegardeæ.												
Kapiti Plains	161803	Male	119	98	22.3	29.4	17.1	13.4	11.2	19.5	5.5	Moderately worn.
Juja Farm	161804	Female	135	115	22.6	29.6	15.9	12.8	11.9	19.6	5.6	Do.
Z. h. vinaceus.												
Mount Sagalla	183913	...do	127	106	23.2	31.3	16.9	13.2	11.8	20.5	5.6	Do.
Mount Umengo	183912	Male	115	94	22.0	28.4	15.0	11.9	11.1	18.6	5.5	Do.
Ndi	[1] 181798	Female	117	98	22.1	29.2	16.0	12.7	11.7	19.1	5.5	Do.
Do	183911	...do	115	92	20.9	27.5	15.2	12.4	11.0	18.2	5.3	Do.

[1] Type.

Specimens.—Four, from localities as follows:

British East Africa: Mount Sagalla, 1 (Heller); Mount Umengo, 1 (Heller); Ndi, 2 (Heller).

The female collected on Mount Sagalla, November 19, contained seven large embryos. Several statements in the original account of this form need correction. The skins are distinctly darker, not lighter, in dorsal coloration than skins of true *hildegardeæ;* the under parts are not more "whitish;" the mesopterygoid fossa is distinctly wider, not narrower, in three out of four of the skulls, than in our two skulls of *hildegardeæ;* the tail is hardly "quite hairless," but is well clothed with light colored hairs longer than the width of two scale rows. The three paratypes do not agree closely with the type in color or skull characters. There is such an extraordinary amount of individual variation among the specimens that I have rather doubted their conspecific identity. This is especially true of the skulls, where the variation in size, breadth of rostrum, and other minor characters is unusual. It would be interesting to study a large series of these mammals from some one locality.

Genus THAMNOMYS Thomas.

1907. *Thamnomys* Thomas, Ann and Mag. Nat. Hist., ser. 7, vol. 19, p. 121. January. (*T. venustus.*)

1915. *Grammomys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 150. August. (*T. dolichurus.*)

All the forms of *Thamnomys* included in our East African collections belong to that section of the genus which has been named *Grammomys* by Thomas. The characters on which the genus *Grammomys* is based[1] seem altogether too slight for even subgeneric recognition.

For measurements of specimens of *Thamnomys* see pages 59–61.

THAMNOMYS SURDASTER SURDASTER Thomas and Wroughton.

1892. *Mus arborarius* True, Proc. U. S. Nat. Mus., vol. 15, p. 459. (Not of Peters.)[2]

1908. *Thamnomys surdaster* Thomas and Wroughton, Proc. Zool. Soc. London, 1908, p. 550. (Zomba, British Central Africa; type in British Museum.)

Specimens.—Three, as follows:

German East Africa: Mount Kilimanjaro (Abbott).

No specimens of typical *surdaster* are in the National Museum collection, but Mr. Thomas has referred the Kilimanjaro form to this species[3] and remarks that it agrees in color with examples from Nyasa.

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[1] "Like *Thamnomys*, but with the postero-internal or '*x*' cusp of the first and second molars reduced to a mere connecting ridge running from the inner cusp of the median lamina to the hinder point of the tooth."—Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 150. August, 1915.

[2] Regarding the identification of *Mus arborarius* Peters, see Thomas and Wroughton, Proc. Zool. Soc. London, 1908, p. 548.

[3] Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 314. September, 1910.

THAMNOMYS SURDASTER POLIONOPS Osgood.

1910. *Thamnomys surdaster polionops* Osgood, Field Mus. Nat. Hist., Pub. Zool., vol. 10, No. 2, p. 8. February. (Ulukenia Hills, British East Africa; type in Field Mus. Nat. Hist., Chicgao.)

1910. *Thamnomys surdaster polionops* Roosevelt, African Game Trails, Amer. ed., pp. 473, 478; London ed., pp. 485, 489.

Specimens.—Seventy-two, from localities as follows:

British East Africa: Engare Narok River, 4 (Loring); Kamiti Farm, Athi Plains, 2 (Loring); Kapiti Plains, 3 (Loring); Kitanga, 2 (Mearns); Mount Mbololo, 48, including 21 in alcohol (Heller); Mount Umengo, 8 (Heller); Oljoro O Nyon River, 2 (Loring, Heller); Oni, 1 (Loring); Wambugu, 2 (Loring).

Specimens from the Taita Hills (Umengo and Mbololo) appear to be somewhat intermediate between typical *polionops* and the Kilimanjaro form which has been referred to *surdaster*, but they are clearly nearest to *polionops* and are best placed with that subspecies. The cheeks and sides are considerably less richly colored than in the Kilimanjaro specimens. Specimens from the Mau Escarpment (heads of Oljoro O Nyon and Engare Narok Rivers) are inseparable from examples of typical *polionops*. The Athi Plains skins have longer tails than usual, but are otherwise typical.

Heller found three embryos each in females collected at Mount Mbololo, November 5; and Mount Umengo, November 13. Half-grown young were taken at the same dates. Loring caught specimens of this commonly arboreal rat "in grass and under rocks in center of prairie land three miles from water." Heller notes trapping it both in trees and on the ground.

THAMNOMYS SURDASTER LITTORALIS Heller.

Plate 18.

1912. *Thamnomys dolichurus littoralis* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 10. July 5. (Mazeras, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Two, as follows:

British East Africa: Mazeras (Heller).

This race differs conspicuously from *T. s. polionops* by its almost pure white feet.

THAMNOMYS IBEANUS IBEANUS Osgood.

1910. *Thamnomys ibeanus* Osgood, Field Mus. Zool. ser., vol. 10, No. 2, p. 8. February. (Molo, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

1914. *Thamnomys* sp. Cockerell, Miller, and Printz, Zool. Anz., vol. 44, p. 439; fig. 10, p. 440. June.

Specimens.—Twenty, from localities as follows:

British East Africa: Aberdare Mountains, 1 (Heller); Burgunett River, Meru Road, 1 (Heller); Kabalolot Hill, 4 (Heller); Naivasha, 13 (Loring); Sirgoit Lake, 1 in alcohol (Heller).

Measurements of specimens of Thamnomys.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Mastoid breadth.	Length of nasals.	Length of mandible.	Upper tooth row.	Condition of molar teeth.
T. s. surdaster.												
G. E. A.:												
Mount Kilimanjaro	37370	Male	.....	.....	25.3	13.1	4.1	.....	12.0	15.0	4.5	Moderately worn.
Do	35243	Female	.....	.....	26.9	14.7	4.4	12.3	11.4	16.6	4.5	Considerably worn.
Do	37371	...do	.....	.....	.....	14.5	4.3	.....	10.5	16.6	4.6	Do.
T. s. polionops.												
B. E. A:												
Mount Umengo	183803	Male	110	163	26.9	14.4	4.2	12.3	11.8	16.2	4.6	Much worn.
Do	183807	...do	115	173	26.3	13.7	4.0	12.1	10.3	16.3	4.6	Moderately worn.
Do	183706	Female	115	162	27.0	14.0	4.4	12.0	11.2	16.0	4.8	Do
Do	183805	...do	112	168	27.4	14.4	4.0	12.1	11.6	15.9	4.7	Do
Do	183808	...do	113	172	26.5	13.7	3.9	11.8	10.9	16.9	4.8	Do.
Mount Mbololo	183777	Male	120	.....	27.3	14.9	4.1	12.2	11.1	16.4	4.5	Much worn.
Do	183778	...Do	103	167	25.9	13.2	3.8	11.8	10.5	16.0	4.6	Moderately worn.
Do	183780	...do	110	145	25.8	13.8	4.3	11.8	10.4	15.2	4.5	Do.
Do	183783	...do	105	166	26.0	13.7	4.2	11.8	10.5	15.5	4.6	Do.
Do	183791	...do	110	169	26.3	13.8	4.0	12.1	10.9	16.1	4.7	Do.
Do	183794	...do	118	165	28.0	15.0	4.4	12.5	12.2	16.7	4.5	Much worn.
Do	183797	..do	115	168	28.0	14.8	4.5	12.5	10.8	17.1	4.4	Do.
Do	183798	...do	110	161	26.6	13.8	4.1	12.1	10.6	15.5	4.5	Moderately worn.
Do	183801	...do	112	178	28.5	14.8	4.5	12.4	12.3	16.9	4.5	Much worn.
Do	183784	Female	110	162	25.9	13.8	4.0	12.0	11.5	15.3	4.8	Moderately worn.
Ulukenia Hills	[1] 17112	Male	120	164	27.2	14.6	4.5	12.7	11.0	16.3	4.5	Do.
Wambugu	163428	Female	117	160	25.9	13.5	4.6	11.9	9.4	15.6	4.2	Do.
Oni	163426	...do	105	174	24.7	13.3	4.3	11.9	9.7	15.4	4.6	Do.
Kamiti Farm	163427	...do	113	191	26.8	14.4	4.4	12.4	11.0	16.5	4.3	Do.
Kitanga Farm	161855	Male	108	150	23.8	12.8	4.2	11.9	10.7	14.5	4.3	Do.
Kapiti Plains	161814	...do	105	171	25.3	13.7	4.4	11.9	10.3	15.4	4.3	Do.
Do	161830	...do	109	158	.....	13.8	4.3	.....	9.7	15.2	4.2	Do.

[1] Type; Field Mus. Nat. Hist., Chicago.

Measurements of specimens of Thamnomys—Continued.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Mastoid breadth.	Length of nasals.	Length of mandible.	Upper tooth row.	Condition of molar teeth.
T. s. polionops—Continued.												
B. E. A.—Continued.												
Engare Narok	162514	Male	115	163	27.3	14.4	4.4	12.2	11.8	16.8	4.3	Moderately worn.
Do	162516	do	107	174	26.0	14.1	4.4	10.8	10.9	16.2	4.5	Do.
Do	162515	Female	108	178	25.9	14.2	4.3	12.4	10.8	16.5	4.6	Do
Oljoro O Nyon	162510	Male	125	180	26.6	14.5	4.4	12.4	11.3	16.5	4.5	Do.
Do	162513	do	112	185	.....	13.6	4.5	11.9	10.5	16.3	4.4	Do.
Do	162511	Female	111	175	26.4	14.4	4.4	12.4	11.2	16.2	4.5	Do.
T. s. littoralis.												
Mazeras	[1] 181799	Male	120	160	28.1	14.9	4.9	12.5	10.6	17.0	4.5	Considerably worn
Do	183923	Female	100	174	25.9	14.1	4.2	12.1	9.4	15.9	4.4	Moderately worn.
T. i. ibeanus.												
Molo	[2] 17096	Male	136	193	30.2	15.8	5.0	13.4	11.8	17.3	5.2	Considerably worn.
Naivasha	162518	do	111	185	26.1	14.1	4.3	12.3	11.0	16.1	4.7	Moderately worn.
Do	162520	do	.....	.....	28.6	14.8	4.4	12.7	12.0	17.3	4.9	Do.
Do	162521	do	120	182	27.8	14.6	4.4	12.6	11.2	16.6	4.8	Do.
Do	162530	do	121	189	29.6	15.6	4.5	13.0	11.8	18.1	5.0	Do.
Do	162517	Female	109	175	27.3	14.5	4.5	12.3	11.2	16.6	4.8	Do.
Do	162528	do	119	187	27.8	14.6	4.6	12.6	11.8	16.8	4.5	Much worn.
Do	162529	do	115	186	26.0	14.5	4.4	11.7	10.9	16.2	4.5	Moderately worn.
Meru Road	183753	do	128	185	29.0	15.3	4.8	12.8	11.2	17.7	5.0	Considerably worn.
Aberdare Mountains	183754	Male	124	190	29.0	15.2	4.4	13.0	12.2	17.3	5.0	Do.
T. i. lutosus.												
Mount Gargues	183758	do	120	173	28.5	14.6	4.6	12.7	11.8	16.9	4.8	Moderately worn.
Do	183761	do	118	180	27.3	14.6	4.7	12.4	11.2	16.1	5.2	Do.
Do	183762	do	120	207	29.4	14.8	4.8	12.8	11.3	17.7	4.9	Considerably worn.
Do	183763	do	115	169	27.2	14.5	4.4	12.4	11.7	16.4	4.7	Moderately worn.
Do	183764	do	115	175	27.6	14.3	4.4	12.3	11.4	16.5	4.6	Do.
Do	183765	do	115	170	28.6	14.8	4.8	12.6	12.3	17.0	4.7	Do.

Do	183757	Female.	120	173	28.0	14.7	4.3	12.3	11.7	17.1	4.8	Do.
Do	183759	...do....	112	176	28.0	14.6	4.7	12.4	11.6	17.1	4.6	Considerably worn.
Do	183767	...do....	105	164	26.9	14.2	4.5	12.2	11.0	16.1	4.6	Moderately worn.
Do	183770	...do....	120	195	28.8	14.4	4.6	12.3	12.2	16.8	4.8	Do.
Do	183771	...do....	122	187	28.9	15.0	4.6	12.7	12.3	17.8	4.7	Considerably worn.
Engare Ndare River	183756	Male....	118	172	27.4	14.4	4.5	12.2	10.9	16.4	4.8	Moderately worn.
Do	183755	Female.	115	175	27.2	14.2	4.3	12.1	10.3	16.4	4.9	Do.
Do	183773	...do....	120	187	27.8	15.1	4.5	12.8	11.8	16.8	4.9	Do.
Do	183774	...do....	125	197	28.7	15.5	4.7	13.1	12.2	17.9	4.9	Much worn.
T. discolor.												
Kalmosi	183709	Male....	110	161	25.8	14.0	4.5	12.1	10.7	15.1	4.3	Moderately worn.
Do	183718	...do....	110	167	25.9	13.7	4.6	11.8	10.4	15.8	4.4	Do.
Do	183726	...do....	108	175	26.8	13.8	4.6	12.5	10.9	16.3	4.3	Do.
Do	183731	...do....	110	155	25.9	13.9	4.4	11.6	10.6	15.8	4.1	Do.
Do	183733	...do....	118	168	26.8	14.0	4.5	12.0	11.2	15.9	4.3	Do.
Do	183734	...do....	113	174	26.2	13.8	4.3	12.0	11.0	15.4	4.4	Do.
Do	183750	...do....	120	183	27.4	14.0	4.6	12.1	11.1	16.4	4.0	Considerably worn.
Do	183708	Female.	115	180	26.8	13.9	4.4	12.0	10.7	15.9	4.4	Moderately worn.
Do	183710	...do....	105	168	25.2	13.8	4.1	11.5	9.6	15.8	4.3	Do.
Do	183723	...do....	120	175	27.2	14.6	4.4	12.7	11.1	16.6	4.1	Much worn.
Do	183732	...do....	115	164	26.1	14.2	4.3	11.9	10.8	16.0	4.2	Moderately worn.
Do	183752	...do....	110	171	25.4	13.4	4.3	11.8	9.7	14.9	4.3	Do.
T. m. gazellæ.												
Lado:												
Rhino Camp	165227	Male....	95	154	23.1	12.3	4.4	11.2	9.0	14.1	4.1	Do.
Do	165229	Female.	108	165	26.2	13.8	4.5	11.2	10.3	15.3	4.3	Do.
Do	165230	...do....	87	132	21.8	12.2	4.0	10.9	8.3	13.0	4.2	Little worn.
Do	165231	...do....	96	152	23.7	12.8	4.1	10.9	8.9	14.4	4.1	Do.
Uganda: Nkyanuna	165236	Male....	103	150	24.2	13.2	4.1	11.3	10.0	14.8	4.1	Moderately worn.
T. m. oblitus.												
B. E. A.:												
Mount Sagalla	183810	Female.	100	150	23.7	13.2	4.2	10.9	9.3	14.6	3.8	Do.
Voi	[2] 17123	...do....	110	176	24.7	12.4	4.4	10.9	9.5	14.4	3.9	Do.

[1] Type: U.S.N.M.

[2] Type; Field Mus. Nat. Hist., Chicago.

Specimens from the Sotik (Kabalolot Hill) although rather immature, are distinctly this species and not *T. surdaster polionops*, which occurs in the Mau Escarpment. The Sirgoit Lake specimen may possibly represent one of the forms described from Mount Elgon [1] which are not otherwise represented in our collection, but the specimen is preserved in alcohol and is not distinguishable from skins of *ibeanus*. This form evidently blends into *Thamnomys ibeanus lutosus* in the Northern Guaso Nyiro country, and specimens from this region are not easily placed. There are no specimens in our collection which approach in size the type skull of *Thamnomys gigas* Dollman, from Kenia. In describing this species Dollman, as usual, gives no clew to the age of the animal beyond the fact that it is "adult." This may mean anything beyond the condition when the last molar has erupted up to extreme senility, during which period the skull of any murine grows enormously. If the type skull of "*gigas*" is an old individual, with much worn teeth, I should suspect the name to be a synonym of *ibeanus*.

THAMNOMYS IBEANUS LUTOSUS Dollman.

1911. *Thamnomys surdaster lutosus* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 657. November. (Mount Nyiro, British East Africa; type in British Museum.)

Specimens.—Twenty-two, from the following localities:

British East Africa: Isiola River, 1 in alcohol (Heller); Mount Gargues, 16 (Heller); Ngare Ndare River, 4 (Heller); Northern Guaso Nyiro, 1 in alcohol (Heller).

Heller found three large embryos each in females collected at Mount Gargues, August 23 and September 1.

THAMNOMYS DISCOLOR Thomas.

1910. *Thamnomys discolor* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 283. March. (Kakumega Forest, Kisumu, British East Africa; type in British Museum.)

Specimens.—Sixty-three, from localities as follows:

Uganda: Kampala, 1 (Loring).

British East Africa: Kaimosi, 62, including 17 in alcohol (Heller, Turner).

As usual in this genus, there is considerable variation in color among the skins of this series. The presence or absence of dark whisker marks and light supraorbital spots is a matter of individual variation. The type-specimen is described by Thomas as lacking both.

Heller records three embryos from a female collected at Kaimosi, February 1.

[1] *Thamnomys surdaster elgonis* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 282, March, 1910; *Thamnomys surdaster insignis* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 7, p. 528. May, 1911.

THAMNOMYS MACMILLANI GAZELLÆ Thomas.

1910. *Thamnomys macmillani gazellæ* Thomas, Ann. and Mag. Nat. Hist., ser. 8. vol. 5, p. 282. March. (Chak-Chak, Bahr-el-Ghazal, Sudan; type in British Museum.)

Specimens.—Ten, as follows:

Lado: Rhino Camp, 8, including 1 in alcohol (Loring, Heller).

Uganda: Lialo, 1 (Loring); Nkyanuna, 1 (Loring).

THAMNOMYS MACMILLANI OBLITUS Osgood.

1910. *Thamnomys oblitus* Osgood, Field Mus. Zool. ser., vol. 10, No. 3, p. 16, April 7. (Voi, British East Africa; type in Field Mus. Nat. Hist.)

Specimen.—One, as follows:

British East Africa: Summit of Mount Sagalla, Taita Hills (Heller).

The type-specimen of *Thamnomys ochraceus* G. M. Allen [1] from the Meru River, north of Mount Kenia, is almost intermediate in coloration between our Lado skins of *T. macmillani gazellæ* and this Sagalla skin of *oblitus*. It is distinguished from *gazellæ* by its slightly paler coloration and uniformly colored upperparts (lacking the decidedly grayish head and shoulders of *gazellæ*) and from *oblitus* by its slightly darker, less bright ochraceous, dorsal coloration and larger hind foot. The three forms are closely related and doubtless intergrade.

Our specimen of *oblitus* almost exactly matches the type, which has been lent me by the Field Museum of Natural History. The species must be rare or difficult to collect, for on Heller's two visits to the Taita Hills he has captured only these two individuals, while at the same time large series of the commoner *polionops* were obtained.

Genus ŒNOMYS Thomas.

1904. *Œnomys* Thomas, Ann and Mag. Nat. Hist., ser. 7, vol. 13, p. 416. June. (*Œ. hypoxanthus.*)

The recognized forms of the rusty-nosed rats included in this genus are not well distinguished. It is clear from an examination of even our small series that almost all of the characters which have been assigned to various subspecies are merely individual variations, or differences in the color and skull due to age. I can distinguish three rather poorly marked forms in our collection from British East Africa, but would not be at all surprised if some of these eventually could not be maintained.

For measurements of specimens see page 65.

[1] Bull. Mus. Comp. Zool., vol. 54, p. 442. April, 1912. The type has been lent me by the Museum of Comparative Zoology through the kindness of Mr. Samuel Henshaw.

ŒNOMYS BACCHANTE BACCHANTE (Thomas).

1903. *Mus hypoxanthus bacchante* THOMAS, Ann. and Mag. Nat. Hist., ser. 7, vol. 12, p. 342. September. (Nandi, British East Africa; type in British Museum.)

1910. *Œ[nomys] bacchante* THOMAS AND WROUGHTON, Trans. Zool. Soc. London, vol. 19, p. 510. March.

1910. *Œnomys hypoxanthus bacchante* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 478; London ed., pp. 485, 490.

Specimens.—Ten, from localities as follows:

BRITISH EAST AFRICA: Aberdare Mountains, 4 (Heller); Mount Kenia, west side, 4 (Loring); Upper Nzoia River, Guas Ngishu Plateau, 1 (Heller); Wambugu, 1 (Loring).

Thomas has named a form of *Œnomys* from the Aberdares (*Œ. oris*) and one from Mount Kenia (*Œ. bacchante moerens*).[1] I can find no specimens in our collection from these localities which differ appreciably from the Nzoia River *bacchante* or resemble the animals described.

I assume that the type locality of *bacchante* is the old Nandi Station, some distance northeast of the new Nandi, and near the edge of the Nandi Escarpment. This is probably about the western limit of distribution of this dark race, which apparently gives way only a slight distance to the westward to the brighter, yellow-rumped form of Uganda and the immediate vicinity of Kavirondo Gulf.

The form of the antorbital plate has been commonly used as a distinguishing character for species and subspecies of *Œnomys*, and is used by Thomas and Wroughton in their key. While there may be slight average difference between specimens of exactly comparable age of different subspecies, still the change in the shape of this plate in *Œnomys* with the development of the masseter muscle is frequently so great that the character is of no practical value in separating forms.

Loring collected this species up to 10,700 feet on Mount Kenia and Heller trapped specimens on the summit of the Aberdares at 11,000 feet.

ŒNOMYS BACCHANTE EDITUS Thomas and Wroughton.

1910. *Œnomys bacchante editus* THOMAS AND WROUGHTON, Trans. Zool. Soc. London, vol. 19, p. 509. March. (Mubuku Valley, East Ruwenzori, Uganda; type in British Museum.)

Specimens.—Twenty-seven, as follows:

BRITISH EAST AFRICA: Kaimosi, 26, including 4 in alcohol (Heller); Yala River, 1 (Heller).

The specimens in this series differ from skins of *O. bacchante bacchante* in their paler general coloration and much brighter, more ochraceous, rumps and lower backs.

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 7, pp. 379-381. April, 1911.

Measurements of Specimens of Œnomys from British East Africa.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry without claws.	Skull: condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Interorbital breadth.	Length of mandible.	Upper tooth row.	Condition of molar teeth.
Œ. b. bacchante.												
Nzoia River	164487	Male	150	175	29	33.2	17.2	13.7	5.1	20.2	6.9	Moderately worn.
Aberdare Mountains	183614	do	160	173	30	35.5	18.1	14.8	6.0	21.8	7.8	Do.
Do	164486	Female	155	160	29	32.5	17.3	14.0	5.0	20.3	7.4	Do.
Do	183615	do	150	174	30	34.1	17.8	14.0	5.6	20.8	7.4	Do.
Mount Kenia	164491	Male	149	166	29	31.6	.....	13.3	5.1	18.8	7.3	Little worn.
Do	164489	Female	162	190	31	.....	.....	.....	.....	22.3	7.5	Moderately worn.
Œ. b. editus.												
Kaimosi	183618	Male	155	183	30	33.3	17.6	13.9	5.2	20.0	7.1	Do.
Do	183620	do	140	176	30	32.8	16.3	13.8	4.9	19.8	6.9	Do.
Do	183629	do	150	195	31	33.9	16.8	14.0	5.4	19.5	7.4	Do.
Do	183633	do	150	183	31	34.2	16.8	14.0	5.7	20.3	7.3	Do.
Do	183619	Female	135	170	29	31.8	15.7	13.3	5.0	19.2	6.5	Do.
Do	183623	do	150	183	30	33.6	16.9	13.4	4.7	20.3	7.2	Do.
Do	183628	do	160	192	31	35.2	18.2	14.3	5.3	21.2	7.5	Do.
Do	183630	do	150	185	29	33.4	16.8	13.2	5.2	20.3	6.8	Do.
Do	183632	do	155	193	30	35.4	17.9	14.2	5.5	21.4	7.4	Much worn.
Do	183634	do	150	180	29	32.8	16.4	13.7	5.4	19.7	7.3	Moderately worn.
Œ. b. vallicola.												
Naivasha	162615	Male	156	179	30	33.6	17.2	14.0	5.0	20.3	7.6	Do.
Do	[1] 162614	Female	160	184	31	33.9	17.1	13.3	5.2	19.7	7.5	Do.

[1] Type.

The Ruwenzori *editus* has never been satisfactorily separated from a subspecies of *bacchante* described by Thomas from the Victoria Nile (*Œ. bacchante unyori*) in 1903. With a knowledge of the variations within species of this genus due to age or individual peculiarities, the two forms, from the descriptions only, seem very much alike. It is possible that this Kavirondo form should be called *Œnomys bacchante unyori*.

There is much variation within the Kaimosi series. The feet are especially variable in color, ranging from light buff, through deep ochraceous, to almost blackish. The amount of deep buff or pinkish buff bordering the lighter underparts is also exceedingly variable, as is the amount of ochraceous in the lower back and the general brightness of the pelage.

ŒNOMYS BACCHANTE VALLICOLA Heller.

Plate 19.

1914. *Oenomys hypoxanthus vallicola* Heller, Smithsonian Misc. Coll., vol. 63, No. 7, p. 11. June 24. (Lake Naivasha, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Four, as follows:

British East Africa: Lake Naivasha, 2 (Loring); Naivasha Station, 2 (Loring).

This is a very slightly marked form scarcely separable from the Kavirondo subspecies which I have called *editus*. Much larger series from the type region will be necessary satisfactorily to settle its status. The two adult specimens are extreme in brightness of the rump and lower back and the two younger skins are lighter colored than the few young of about the same age in the series of *editus*. There appear to be no satisfactory characters by which the skulls may be separated.

Genus RATTUS Fischer.

1803. *Ruttus* (misprint for *Rattus*) Fischer, Nationalmus. Naturg. Paris, vol. 2, p. 128. (*R. norvegicus.*)[1]

1827. *Rattus* Donovan, Nat. Repos., vol. 3, pl. 73, text p. 1 (1834). (*R. rattus.*)[2]

1881. *Epimys* Trouessart, Bull. Soc. Angers, vol. 10, p. 117. (*R. rattus.*)[3]

1915. *Æthomys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 477. December. (*R. kaiseri hindei.*)

1915. *Praomys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 477. December. (*R. tullbergi.*)

1915. *Myomys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 477. December. (*R. colonus.*)

[1] For discussion of type-species of *Rattus* Fischer see Hollister, Proc. Biol. Soc. Washington, vol. 29, p. 126, June 6, 1916; Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 18, p. 240, August, 1916; and Hollister, Proc. Biol. Soc. Washington, vol. 29, pp. 206–207, Sept. 22, 1916.

[2] For note on type-species of *Rattus* Donovan see Hollister, Proc. Biol. Soc. Washington, vol. 29, p. 126, June 6, 1916.

[3] For note on type-species of *Epimys* Trouessart see Miller, Proc. Biol. Soc. Washington, vol. 23, pp. 57–60, April 19, 1910.

1915. *Mastomys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 477. December. (*R. coucha.*)
1916. *Rattus* Hollister, Proc. Biol. Soc. Washington, vol. 29, p. 126. June 6.

The typical rats (Genus *Rattus*) of the African continent have been separated into five subgenera by Thomas in a recent paper.[1] As stated by Thomas, the detailed characters of these groups will need much further study, but he has presented a key based entirely on mammary formulæ by which his named subgenera may be distinguished if one possesses breeding female examples. From a study of the skulls and teeth of the rats of eastern Africa it is evident that these groups are of unequal value, though all will doubtless prove valid superspecific groups in the final revision. It is indeed probable that the number of subgenera should be increased rather than reduced. According to the arrangement of Thomas, the species listed in this paper apparently fall into the following subgenera:

Rattus s. s.—*Rattus rattus kijabius* (Allen).
Rattus nigricauda loringi (Heller).
Æthomys.—*Rattus kaiseri helleri* Hollister.
Rattus kaiseri medicatus (Wroughton).
Rattus kaiseri noræ (Wroughton).
Rattus kaiseri turneri (Heller).
Rattus kaiseri hindei (Thomas).
Rattus kaiseri manteufeli (Matschie).
Rattus chrysophilus voi (Osgood).
Praomys.—*Rattus tullbergi jacksoni* (de Winton).
Rattus tullbergi peromyscus (Heller).
Rattus denniæ (Thomas).
Rattus taitæ (Heller).
Rattus stella kaimosæ (Heller).
Myomys.—*Rattus fumatus fumatus* (Peters).
Rattus fumatus subfuscus (Osgood).
Rattus tana (True).
Mastomys.—*Rattus coucha ismailiæ* (Heller).
Rattus coucha ugandæ (de Winton).
Rattus coucha tinctus Hollister.
Rattus coucha neumani (Heller).
Rattus coucha panya (Heller).
Rattus coucha hildebrandtii (Peters).
Rattus coucha durumæ (Heller).

The typical subgenus *Rattus* should probably be dropped from the East African list. The first species, *Rattus rattus kijabius,* would be better placed in a subgenus *Epimys;* and the proper allocation of *Rattus nigricauda loringi* is uncertain.

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 477. December, 1915.

RATTUS RATTUS KIJABIUS (Allen).

1909. *Mus kijabius* Allen, Bull. Amer. Mus. Nat. Hist., vol. 36, p. 169. March 19. (Kijabe, British East Africa; type in Amer. Mus., New York.)

1911. *Mus* (*Epimys*?) *muansæ* Matschie, Sitz.-ber. Ges. nat. Freunde Berlin, 1911, p. 340. October. (Muansa, German East Africa; type in Berlin Mus.)

1916. *Epimys jujensis* Lönnberg, Arkiv för Zool., vol. 10, No. 12, p. 10. May. (Juja Farm, British East Africa; type in R. Nat. Hist. Mus., Stockholm.)

Specimens.—Fifty-nine, from the following localities:

British East Africa: Changamwe, 17, including 3 in alcohol (Mearns); Juja Farm, 7 (Loring, Mearns); Kapiti Plains, 11 (Loring); Mazeras, 13 (Heller); Mount Mbololo, 1 (Heller); Nairobi, 8, including 2 in alcohol (Mearns); Ulukenia Hills, 2 (Loring).

This rat has frequently been recorded from East Africa under the name *Epimys* (or *Mus*) *rattus*. Its origin is uncertain, but from the fact that it is found only along the railroad or about the older settlements and highways of trade, it may safely be assumed that the animal was introduced by man. No specimen in the museum series is typical of true *rattus* of northern Europe or of the subspecies *alexandrinus* of the Mediterranean shores of Europe and northern Africa. All are to a certain extent intermediate in color between these two forms and resemble very closely the known hybrids or crosses of *rattus* and *alexandrinus* frequently found in the southern United States. The series as a whole is very uniform in color and there is little variation in the shade of the underparts or feet. The color is about that described by Bonhote [1] for his "*typical alexandrinus*," which is clearly not the *alexandrinus* of Geoffroy.

This East African form of *rattus*, whatever its origin, has apparently had four distinctive names based upon it, *kijabius* Allen, 1909; *muansæ* Matschie, 1911; *rattiformis* Matschie, 1915;[2] and *jujensis* Lönnberg, 1916. Inasmuch as the form is certainly not typical of either *rattus* or *alexandrinus*, it seems best, until a more satisfactory solution of the case is worked out, to use for it the first name actually given to it in East Africa. Doctor Allen has kindly sent me for examination the type and three topotypes of his *Mus kijabius* for study in this connection and as they prove to represent the form under discussion the name *Rattus rattus kijabius* may be applied to it. The type is a young adult, but has the teeth worn more than usual at its age and considerably more than the teeth of the somewhat larger skull of another specimen in the type series.

Measurements of the type skull of *kijabius* (Amer. Mus. Nat. Hist., 27881, male) and of a topotype female, older, but with the teeth less

[1] Proc. Zool. Soc. London, 1910, p. 655. October.

[2] "*Mus* (*Epimys*) *rattiformis* Matschie, Sitz.-ber. Ges. Nat. Freunde, Berlin, 1915, pp. 98-99." Type locality, Amani, Usambara, German East Africa. I have not seen the description but judge that the animal is the East African "*rattus*."

worn (Amer. Mus. Nat. Hist. 27882) follow: Condylobasal length, 30.5, 32.3; breadth of braincase, 15, —; mastoid breadth, 14.2, 14.4; length of nasals, 11.5, 11.8; interorbital breadth, 5.4, 5.5; upper tooth row, alveoli, 6.4, 6.5. Both skulls are so young that they would ordinarily be excluded from tables of measurements of fully grown individuals.

One of our specimens from Juja Farm has been submitted to Doctor Lönnberg for comparison with the type of *Epimys jujensis*. Doctor Lönnberg writes that these specimens are very similar and probably belong to the same species. The Juja Farm specimens are unquestionably identical with Allen's *Mus kijabius*.

RATTUS NIGRICAUDA LORINGI (Heller).

Plate 20.

1909. *Thamnomys loringi* Heller, Smithsonian Misc. Coll., vol. 52, pt. 4, p. 471. November 13. (Lake Naivasha, British East Africa; type in U. S. Nat. Mus.)

1910. *Mus loringi* Osgood, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 277. March.

1910. *Thamnomys loringi* Roosevelt, African Game Trails, Amer. ed., pp. 473, 478; London ed., pp. 485, 490.

1910. *Thamnomus loringi* Roosevelt, African Game Trails, Amer. ed., p. 484; London ed., p. 495.

Specimens.—Twenty-two, from localities as follows:

British East Africa: Lake Naivasha, 6 (Loring); Lime Springs, Sotik, 7, including 1 in alcohol (Heller); Loita Plains, 1 (Heller); Naivasha Station, 7 (Loring); Telek River, Sotik, 1 (Heller).

Specimens from the Sotik appear to be slightly grayer, less reddish, above; and with less clear slate color in the underfur of the lower parts than skins from the type region around Naivasha; but the difference is hardly sufficient to separate a race, especially as the series from the two localities were collected at different seasons.

Heller notes four embryos in a female from Loita Plains, April 27. Labels of two specimens from Lime Springs are marked: "Caught on limbs of acacia." Roosevelt and Heller[1] have written of these masked tree-rats:

> In the Rift Valley; common around Naivasha. Arboreal and nocturnal. Much the habits of our neotoma, but do not build large nests. Build nests about 6 inches in diameter, made of sticks, placed in the branches of thorn-trees; also in burrows near the bottom of the trunks; runways lead from the trees containing the nests to the burrows. Trapped on the ground and in traps set in notches of the trees.

For measurements of specimens see page 70.

[1] Appendix B, African Game Trails, Amer. ed., p. 478. 1910.

Measurements of specimens of Rattus nigricauda loringi from British East Africa.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Length of mandible.	Upper tooth row (alveoli).	Lower tooth row (alveoli).	Condition of molars.
Lake Naivasha	161904	Female	160	174	28.0	35.5	19.4	5.0	21.2	5.8	6.0	Moderately worn.
Do	162534	...do	150	157	26.5	.....	.....	5.0	22.1	5.9	5.7	Do.
Do	162536	...do	154	143	26.4	33.5	18.3	4.9	21.2	5.9	5.9	Do.
Naivasha Station	162539	...do	155	161	27.3	36.4	19.3	4.9	21.8	6.2	5.8	Do.
Do	162541	...do	153	143	27.1	34.0	18.9	5.1	21.9	5.9	5.8	Do.
Do	162543	...do	137	156	28.2	32.1	16.5	4.8	20.4	5.9	5.7	Do.
Lime Springs	181718	Male	135	147	25.0	32.7	19.1	4.7	20.4	5.9	5.5	Do.
Do	181719	...do	130	158	26.0	31.2	17.7	4.6	19.5	5.8	5.4	Do.
Do	181716	Female	150	183	26.8	35.1	19.7	5.1	21.9	5.9	5.6	Considerably worn.
Do	181720	...do	135	155	26.6	.....	17.4	4.6	19.5	5.8	5.4	Moderately worn.
Loita Plains	181722	...do	150	163	27.0	32.6	18.3	4.8	20.5	5.8	5.4	Do.
Telek River	181723	Male	130	120	25.0	28.4	16.0	4.8	17.4	5.6	5.4	Little worn.

[1] Type.

RATTUS KAISERI HELLERI Hollister.

Plate 19.

1914. *Epimys kaiseri centralis* Heller, Smithsonian Misc. Coll., vol. 63, No. 7, p. 10. June 24. (Rhino Camp, Lado; type in U. S. Nat. Mus.)

1918. *Rattus helleri* Hollister, Proc. Biol. Soc. Washington, vol. 31, p. 97. June 29. (New name for *Epimys kaiseri centralis* Heller, 1914, preoccupied by *Mus auricomis centralis* Schwann, Proc. Zool. Soc. London, 1906, p. 107.)

Specimens.—Forty-eight, from the type locality, as follows:

Lado: Rhino Camp, 48, including 5 in alcohol and 2 odd skulls (Loring, Heller, Mearns).

This is a slightly characterized form of the *kaiseri* group, in color very much like *Rattus kaiseri noræ*, of northern British East Africa, but averaging slightly smaller, with shorter hind foot and tail, and lighter dentition. I have not seen specimens of *Rattus kaiseri kaiseri* from Marungu. The specimens from Uganda, mentioned by Heller in the original description of "*centralis*" as somewhat less typical in character, I have placed with *Rattus kaiseri medicatus*, as they seem to go best with specimens of that subspecies. The Nile is apparently the dividing line between the two forms.

For measurements of specimens of rats of the *Rattus kaiseri* group see pages 73–75.

RATTUS KAISERI MEDICATUS (Wroughton).

1909. *Mus medicatus* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 540. December. (Mumias, British East Africa; type in British Museum.)

1918. *Rattus medicatus* Hollister, Bull. 99, U. S. Nat. Mus., pt. 1, p. 178. August 16.

Specimens.—Twenty-five, from the following localities:

Uganda: Gondokoro, 3, including 1 in alcohol (Loring); Hoima, 2, including 1 in alcohol (Loring); Kabula Muliro, 4, including 2 in alcohol (Loring); Kikanda, 2, including 1 in alcohol (Loring); Kisingo, 2, including 1 in alcohol (Loring); Lialo, 2, including 1 in alcohol (Loring); Lombeki River, 1 in alcohol (Loring); Nimule, 2 (Loring); Nkyanuna, 2, including 1 in alcohol (Loring).

British East Africa: Kaimosi, 2, including 1 in alcohol (Heller); Kakumega, 1 (Heller); Lukosa River, 1 (Heller); Sirgoit Lake, Guas Ngishu Plateau, 1 (Heller).

This long-tailed, grayish-buff subspecies of *kaiseri* is very like both *helleri* and *noræ* in color, and the boundaries of distribution for the three subspecies are difficult to define. The Nile appears to be a convenient separating line between *medicatus* and *helleri*, as the greatest break in dimensions comes at that point. The Uganda specimens listed above were all included by Heller with his "*centralis*," but seem best placed with the earlier described *medicatus*.

RATTUS KAISERI NORÆ (Wroughton).

1909. *Mus noræ* WROUGHTON, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 541. December. (Guasa Narok, Northern Guaso Nyiro, British East Africa; type in British Museum.)

Specimens.—Forty-five, from localities as follows:

BRITISH EAST AFRICA: Isiola River, 1 (Heller); Mount Gargues, 20, including 1 in alcohol and 1 odd skull (Heller); Mount Lololokwi, 19, including 1 in alcohol (Heller); Northern Guaso Nyiro, 5 (Heller).

This more northern subspecies of the common East African group of rats of the subgenus *Æthomys* is readily distinguished from the more southern *Rattus kaiseri hindei* by its more grayish, less reddish coloration and much longer tail. It is colored almost precisely like *R. k. helleri* of Lado, from which it differs in average size alone; and is perhaps scarcely separable from *R. t. medicatus*, which it even more resembles.

A female from 6,000 feet on Mount Gargues, August 28, contained four small embryos.

RATTUS KAISERI TURNERI (Heller).

Plate 21.

1914. *Epimys kaiseri turneri* HELLER, Smithsonian Misc. Coll., vol. 63. No. 7, p. 8. June 24. (Kisumu, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Twelve, as follows:

BRITISH EAST AFRICA: Kisumu (Heller).

Heller states that these specimens were all collected in the papyrus beds on the margin of Kavirondo Bay. The form is doubtless confined to the shore of Victoria Nyanza, the higher country immediately back of the lake being occupied by the long-tailed, less richly colored *medicatus*. A female collected January 19 contained 3 embryos.

This is a rich reddish-tinted race of *kaiseri*, most resembling *hindei* in general coloration, but darker and with a still shorter tail than in that form.

RATTUS KAISERI HINDEI (Thomas).

1902. *Mus hindei* THOMAS, Ann. and Mag. Nat. Hist., ser. 7, vol. 9, p. 219. March. (Machakos, British East Africa; type in British Museum.)

1910. *Epimys hindei* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 477; London ed., pp. 485, 489.

1914. *Epimys hindei* COCKERELL, MILLER, and PRINTZ, Zool. Anz., vol. 44, p. 436, figs. 2, 2*a*. June.

Specimens.—Sixty-two, from the following localities:

BRITISH EAST AFRICA: Changamwe, 6, including 2 in alcohol (Mearns); Kapiti Plains, 2 (Loring); Machorra, Taita Hills, 7 (Heller); Mariakani, 1 (Heller); Mazeras, 12, including 1 in alcohol (Heller); Mount Sagalla, 5, including 1 in alcohol (Heller); Mount Mbololo, 6, including 3 in alcohol (Heller); Mount Umengo, 2 (Heller); Mtoto Andei, 4, including 1 in alcohol (Heller); Sir Alfred Pease's Farm, 2, including 1 in alcohol (Mearns); Ulukenia Hills, 15, including 1 in alcohol (Loring).

Measurements of the subspecies of Rattus kaiseri.

Locality.	No.	Sex.	Head and body.	Tail vertibræ.	Hind foot, dry, without claws.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Mastoid breadth.	Length of nasals.	Upper tooth raw, alveoli.	Condition of molars.
R. k. helleri.												
Lado:												
Rhino Camp	[1] 165035	Male	148	162	27.5	35.1	18.9	5.8	14.9	15.2	5.9	Considerably worn.
Do	165038	...do	159	165	27.0	35.4	19.0	6.3	14.8	14.5	6.3	Do.
Do	165056	...do	156	148	28.5	34.5	18.2	5.6	13.7	15.0	6.3	Moderately worn.
Do	165059	...do	158	175	28.5	35.3	17.7	5.6	14.3	15.1	6.0	Do.
Do	165061	...do	153	150	26.5	34.1	17.9	5.7	13.9	14.4	6.2	Do.
Do	165071	...do	149	.....	28.0	35.0	18.4	6.1	14.4	15.4	6.8	Much worn.
Do	165072	...do	158	160	28.0	34.0	17.5	5.6	14.2	15.0	6.2	Moderately worn.
Do	165076	...do	152	146	27.0	33.8	18.1	5.6	14.0	14.5	6.3	Do.
Do	165058	Female	160	156	27.5	32.3	16.4	5.4	13.5	13.8	6.1	Do.
Do	165074	...do	154	134	28.0	34.0	17.8	5.4	14.3	14.8	6.1	Do.
R. k. medicatus.												
Uganda:												
Gondokoro	165081	Male	168	156	27.5	35.3	18.2	5.9	14.5	15.3	6.0	Moderately worn.
Do	165082	...do	155	158	29.0	34.2	17.8	6.0	14.6	14.4	6.5	Do.
Kikanda	165031	...do	172	176	31.5	36.3	19.0	5.7	14.9	16.2	6.7	Do.
Lialo	165030	Female	158	165	29.0	35.0	18.8	4.9	14.5	15.0	6.7	Do.
Kabula Muliro	165027	Male	165	171	30.5	36.2	17.8	5.4	14.6	15.9	6.3	Do.
Do	165028	...do	158	163	30.0	35.0	17.8	5.7	14.8	16.0	6.5	Do.
B. E. A.:												
Sirgoit Lake	164466	Female	175	181	29.5	37.6	19.1	5.9	14.5	16.8	7.2	Considerably worn.
Kaimosi	183340	Male	165	179	30.0	36.3	19.3	6.0	14.6	15.8	6.3	Moderately worn.
Kakumega	183342	...do	155	169	30.0	35.0	17.3	5.8	14.4	15.2	6.4	Do.
Lukosa River	183341	...do	145	158	28.5	33.8	17.8	5.8	14.0	14.6	6.0	Do.

[1] Type.

Measurements of the subspecies of Rattus kaiseri—Continued.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Mastoid breadth.	Length of nasals.	Upper tooth raw, alveoli.	Condition of molars.
R. k. nore.												
B. E. A.:												
Nor. Guaso Nyiro	183382	Male	150	169	28.5	34.3	18.6	5.6	14.4	14.7	6.9	Moderately worn.
Do	183383	do	150	169	29.5	34.0	17.6	5.6	13.9	14.3	6.5	Do.
Do	183381	Female	150	178	31.0	35.2	17.2	5.5	13.8	15.1	7.0	Do.
Mount Lololokwi	183364	Male	150	170	27.5	34.6	17.9	5.6	14.6	15.6	6.8	Considerably worn.
Do	183368	do	155	170	29.0	35.7	18.1	5.7	14.4	15.8	6.8	Moderately worn.
Do	183378	do	163	196	29.0	36.9	19.4	6.1	15.6	15.2	6.8	Much worn.
Do	183379	Female	155	194	31.0	35.5	18.4	5.7	14.8	15.9	6.8	Moderately worn.
Mount Gargues	183347	Male	170	182	29.5	37.7	19.2	6.3	14.7	16.8	6.8	Considerably worn.
Do	183352	do	155	162	31.0	35.5	19.4	5.9	14.7	15.8	6.8	Moderately worn.
Do	183357	do	150	178	30.0	35.0	18.3	5.7	14.2	15.6	6.8	Much worn.
Do	183349	Female	150	185	28.5	35.0	18.5	5.4	14.2	15.8	6.9	Moderately worn.
R. k. turneri.												
B. E. A.:												
Kisumu	183343	Male	150	140	28.0	34.8	18.3	5.3	15.2	14.5	7.2	Moderately worn.
Do	183388	do	150	130	27.0	34.4	18.7	5.4	14.9	14.6	7.0	Do.
Do	183389	do	140	117	28.0	32.8	17.3	5.1	14.1	13.2	6.8	Little worn.
Do	183392	do	150	128	28.0	34.2	18.2	5.5	15.0	14.5	6.9	Moderately worn.
Do	183393	Female	155	120	27.0	34.6	18.7	5.4	15.2	15.1	6.7	Do.
Do	[1] 183395	do	155	135	27.0	35.2	19.0	5.6	15.7	15.3	6.6	Do.
R. k. hindei.												
B. E. A.:												
Ulukenia Hills	162890	Male	151	141	27.0	33.5	18.2	5.5	14.1	14.8	6.3	Moderately worn.
Do	163430	Female	150	143	26.5	34.3	18.3	5.4	14.9	16.2	6.3	Much worn.
Do	163431	do	157	143	28.0	34.8	18.2	5.4	14.6	15.8	6.7	Considerably worn.
Do	163432	do	165	153	26.5	35.9	18.4	5.8	15.1	14.8	6.3	Do.

Do	163443	...do....	162	141	28.0	35.1	17.7	5.5	14.7	14.8	6.3	Moderately worn.
Machorra	183318	...do....	160	152	29.0	36.5	19.0	5.8	15.4	15.8	6.7	Do.
Do	183319	...do....	155	157	30.0	36.4	19.5	5.7	16.0	15.1	7.0	Do.
Do	183322	...do....	155	150	28.5	35.7	19.4	5.5	15.6	15.0	6.4	Do.
Do	183324	...do....	170	154	29.0	37.4	18.8	5.9	15.7	15.2	6.8	Much worn.
Mount Umengo	183316	Male....	145	124	27.5	34.0	18.2	5.8	14.6	13.9	6.9	Moderately worn.
Do	183317	Female .	150	135	26.5	33.7	18.3	5.4	15.0	13.5	6.5	Do.
Mount Sagalla	183326	Male....	150	142	29.0	35.9	18.7	5.5	15.4	14.5	6.8	Do.
Do	183327	...do....	140	134	28.0	33.0	16.7	4.9	14.5	13.2	6.2	Do.
Do	183328	Female .	142	137	29.0	33.3	17.3	5.2	14.4	13.8	6.8	Do.
Mariakani	183339	Male....	145	130	28.3	34.4	18.3	5.4	15.0	13.5	6.6	Do.
Mazeras	183329	...do....	160	134	29.0	35.0	18.8	5.6	15.3	14.6	6.8	Do.
Do	183331	...do....	160	135	29.0	36.2	18.9	5.7	16.2	14.2	6.6	Do.
Do	183335	...do....	160	137	29.0	36.9	19.0	5.7	16.5	15.0	6.5	Do.
Do	183330	Female .	160	138	28.5	36.0	18.8	5.8	15.1	14.3	6.8	Do .
Do	183337	...do....	155	135	29.0	36.0	18.8	5.5	15.5	14.7	6.8	Do.
R. k. manteufeli.												
B. E. A.:												
Kabalolot Hill	181680	Male....	155	135	27.0	34.6	18.9	5.2	15.8	15.1	6.6	Moderately worn.
Do	181690	...do....	155	131	27.0	35.0	18.9	5.2	15.9	15.8	6.7	Considerably worn.
Do	181682	Female .	160	122	27.0	35.9	19.5	5.5	15.2	14.4	6.8	Do.
Do	181683	...do....	165	132	27.0	35.8	19.2	5.5	16.3	15.5	6.8	Do.
Do	181684	...do....	160	145	27.0	34.9	18.6	5.4	15.2	14.6	6.5	Moderately worn.
Do	181687	...do....	165	137	27.0	35.8	19.6	5.3	15.1	15.0	7.1	Do.
Do	181692	...do....	150	135	28.0	33.7	18.2	5.5	14.8	14.5	6.9	Do.

[1] Type.

Specimens of this rat from near the coast have shorter tails on the average than those from the type region, but the difference is not sufficient to make it necessary to recognize a separate subspecies. For measurements of specimens see page 74.

RATTUS KAISERI MANTEUFELI (Matschie).

1911. *Mus* (*Epimys*?) *manteufeli* MATSCHIE, Sitz.-ber. Ges. nat. Freunde Berlin, 1911, No. 8, p. 341. October. (Muansa, south coast of Victoria Nyanza, German East Africa; type in Berlin Museum.)

Specimens.—Forty-nine, from the following localities:

BRITISH EAST AFRICA: Engare Narok River, 1 (Loring); Kabalolot Hill, Sotik, 15, including 2 in alcohol (Heller); Loita Plains, 2 (Heller); Njoro Osolali, Sotik, 1 (Loring); Southern Guaso Nyiro River, 26, including 6 in alcohol (Loring, Heller); Telek River, 4 (Heller).

Specimens of the common Masai bush rat from the Southern Guaso Nyiro and Sotik are distinctly darker, more brownish and less reddish, than skins from east of the Rift valley. A form of this rat has been described by Matschie from the southern shores of Speke Gulf and it is highly probable that this is the subspecies of the lake drainage in the Sotik. I do not at any rate feel that a form from so near Matschie's type locality should be described without actual comparison with typical material and I see no reason for not referring the Sotik specimens to *manteufeli* until such time as direct comparisons can be made. The specimens in the collection agree well with the description.

Heller studied the type of *Mus manteufeli* in the Berlin Museum and made the following notes:

Type A 182.11, Muansa, G. E. A.; in alcohol, skull extracted. Same color and size as *hindei*. Skull, condylo-incisive length, 36.3; zygomatic breadth, 19; tooth row, 6; length of incisive foramen, 8.2; diastema, 10.

A rat described by Dollman[1] from the Lemek Valley, between the Amala River and the Southern Guaso Nyiro, as *Epimys walambæ amalæ*, is apparently not represented in our collections. It differs conspicuously from the animal I have referred to *manteufeli* by its white ventral surface.

RATTUS CHRYSOPHILUS VOI (Osgood).

1910. *Mus voi* OSGOOD, Field Mus. Zool. ser., vol. 10, No. 2, p. 11. February. (Voi, British East Africa; type in Field Museum of Nat. Hist.)

Specimens.—Twenty-two, from the following localities:

BRITISH EAST AFRICA: Mount Mbololo, 1 in alcohol (Heller); Mount Sagalla, 7, including 1 in alcohol (Heller); Mtoto Andei, 1 (Heller); Ndi, 13 (Heller).

[1] Abstract Proc. Zool. Soc. London, 1914, p. 25, April 14, 1914.

The specimen from Mtoto Andei appears to extend the known range of this rat in British East Africa. I am not aware of a previous record from north of the Taita Hills.

According to Mr. Thomas's classification of the groups of African *Rattus*, this species is a member of the subgenus *Æthomys*, along with the forms of *Rattus kaiseri* listed above.

RATTUS TULLBERGI JACKSONI (de Winton).

1897. *Mus jacksoni* DE WINTON, Ann. and Mag. Nat. Hist., ser. 6, vol. 20, p. 318. September. (Entebbe, Uganda; type in British Museum.)

1910. *Epimys jacksoni* ROOSEVELT, African Game Trails, Amer. ed., p. 473; London ed., p. 485.

1914. *Epimys tulbergi endorobæ* FRICK, Ann. Carnegie Mus., vol. 9, p. 8, pl. 2. June 6. (Not *Epimys endorobæ* Heller.)

Specimens.—One hundred and thirteen, from localities as follows: UGANDA: Kabula Muliro, 4 (Loring); Kampala, 3 (Heller); Kikandwa, 1 (Loring); Kisimbiri, 1 (Loring).

BRITISH EAST AFRICA: Aberdare Mountains, 2 (Heller); Guas Ngishu Plateau, 12 and 30 miles north of Ravine, 5 (Heller); Kaimosi, 55, including 16 in alcohol (Heller, Turner); Kakumega, 2 (Heller); Kisumu, 2 (Heller); Lukosa River (Yala River), 3, including 1 in alcohol (Heller); Mount Kenia, 23, including 22 in alcohol (Heller, Loring); Nyuki River, 2 in alcohol (Heller); Ravine, 1 in alcohol (Heller); Wambugu, 9 (Loring).

In the series from Kaimosi are a few puzzling specimens which, after some hesitation, I have placed with this species. While the skulls of all other specimens listed above agree in presenting a very uniform appearance, these few skulls—about a dozen in all—differ in having shorter palatine slits, not reaching plane of first molar, and in almost complete absence of supraorbital ridges. Otherwise they show no distinguishing characters and the skins are absolutely inseparable from other skins in the Kaimosi series and from other parts of the range of *jacksoni*.

Heller found a female specimen at Kakumega February 15 with 3 fetuses; and two at Kaimosi, January 27 and February 3, each with four small embryos.

Many skins of *jacksoni* are indistinguishable by external characters from specimens of true *tullbergi* from West Africa.

For measurements of specimens of the subspecies of *Rattus tullbergi* see page 78.

RATTUS TULLBERGI PEROMYSCUS (Heller).

Plate 20.

1909. *Mus peromyscus* HELLER, Smithsonian Misc. Coll., vol. 52, pt. 4, p. 472. November 13. (Njoro O Nyiro, Sotik, British East Africa; type in U. S. Nat. Mus.)

1910. *Epimys peromyscus* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 477, and 484 (part); London ed., pp. 485, 489, and 495 (part).

Measurements of the subspecies of Rattus tullbergi.

Form and locality.		Sex.	Head and body.	Tail vertebræ.	Hind foot, dry.	Ear, dry from notch.	Skull: Condylobasal length.	Zygomatic breadth.	Upper tooth row, alveoli.	Condition of teeth.
R. t. jacksoni.										
Uganda: Kabula Muliro	165100	Female..	123	147	23.5	18	28.7	14.6	4.8	Considerably worn.
Kisimbiri	165099	...do.....	130	138	24.0	18	29.5	15.3	4.9	Do.
Kikanda	165101	Male....	125	150	24.5	18	30.2	14.8	4.9	Do.
Kampala	165095	...do.....	123	140	23.0	17	29.0	15.2	5.2	Do.
Do	165096	Female..	120	138	23.5	16	28.3	14.8	5.0	Moderately worn.
B. E. A.: Kaimosi	183450	Male....	115	145	24.0	17	28.4	14.8	5.2	Do.
Do	183451	...do.....	110	142	25.0	16	28.7	14.7	5.4	Do.
Do	183473	...do.....	122	162	26.0	18	31.0	14.8	5.3	Do.
Do	183474	...do.....	120	153	25.5	18	30.0	14.7	5.3	Do.
Do	183475	...do.....	120	154	25.0	16	29.4	15.0	5.4	Much worn.
Do	183477	...do.....	120	145	24.0	19	30.1	15.0	5.2	Do.
Do	183448	Female..	120	149	25.0	19	30.1	15.2	5.2	Considerably worn.
Do	183453	...do.....	110	140	24.0	18	28.8	14.6	5.0	Do.
Do	183454	...do.....	110	146	25.0	17	29.4	14.9	5.2	Moderately worn.
Do	183479	...do.....	120	142	24.5	17	29.3	14.8	5.0	Do.
Guas Ngishu	163353	Male....	115	135	24.0	18	27.8	14.8	5.0	Do.
Do	163354	Female..	116	133	23.0	18	28.3	14.1	5.2	Do.
Aberdares	183445	Male....	105	135	24.0	17	29.4	14.8	5.4	Considerably worn.
Do	183444	Female..	120	146	25.5	18	29.4	14.6	5.3	Do.
Mount Kenia	163346	...do.....	113	143	22.0	18	28.1	14.3	5.0	Do.
Wambugu	163405	Male....	115	147	24.0	17	28.3	13.8	4.8	Do.
Do	163363	Female..	121	162	23.0	19	28.5	14.8	4.8	Much worn.
Do	163404	...do.....	99	147	22.5	17	27.0	13.5	4.8	Moderately worn.
R. t. peromyscus.										
B. E. A.: Njoro O Nyiro	[1] 161905	Male....	135	146	25.0	20	30.5	15.7	5.5	Considerably worn
Engare Narok	162365	...do.....	121	141	24.0	20	29.6	14.6	5.5	Moderately worn.
Do	162368	...do.....	122	145	24.5	20	30.1	14.4	5.5	Do.
Do	162376	...do.....	115	137	23.5	19	28.9	14.5	5.4	Considerably worn.
Do	162382	...do.....	116	141	24.0	20	30.1	15.1	5.8	Much worn.
Do	162383	Female..	103	127	23.5	18	26.3	13.8	5.0	Moderately worn.

[1] Type.

Specimens.—Thirteen, from the following localities:

British East Africa: Engare Narok River, 12 (Loring); Njoro O Nyiro (Oljoro O Nyon), 1 (Heller).

This is a slightly marked form. It averages less reddish, more dusky, in color than *jacksoni*, and has larger ears and longer fur.

RATTUS DENNIÆ (Thomas).

Plate 21.

1906. *Mus dennix* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 18, p. 144. August. (Ruwenzori East, Uganda, altitude 7,000 feet; type in British Mus.)

1910. *Mus dennix* Thomas and Wroughton. Trans. Zool. Soc. London, vol. 19. p. 504. March.

1910. *Epimys endorobx* Heller, Smithsonian Misc. Coll., vol. 56, No. 9, p. 3. July 22. (Western edge of Mau Forest, 25 miles north of Eldoma Ravine, British East Africa, altitude 8,600 feet; type in U. S. Nat. Mus.)

1910. *Epimys endorobx* Roosevelt, African Game Trails, Amer. ed., p. 473; London ed., p. 485.

Specimens.—Forty-seven, from the following localities:

Uganda: Ruwenzori East, 1 (Dent).

British East Africa: Aberdare Mountains, 2 (Heller); Guas Ngishu Plateau, 25 and 30 miles north of Eldoma Ravine, 2 (Heller); West side of Mount Kenia, 42 (Loring, Mearns, Heller).

Specimens from British East Africa, representing Heller's *Epimys endorobæ*, do not differ enough from the Ruwenzori form to warrant recognition as a separate race. I can find no characters to distinguish our Ruwenzori specimen from many of the skins and skulls from Mount Kenia. The dark area between the nose and eye is sharply defined in the Ruwenzori skin and faintly indicated on many of the Kenia specimens, but the specimens were collected at widely different seasons and a few of the British East African skins, including the type of *endorobæ*, show the dark area very much as in the Uganda skin of *denniæ*.

For measurements of specimens, see page 80.

RATTUS TAITÆ (Heller).

Plate 21.

1912. *Epimys taitæ* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 9. July 5. (Mount Mbololo, Taita Hills, British East Africa, 5,000 feet altitude; type in U. S. Nat. Mus.)

Specimens.—Fifty, from the following localities:

British East Africa: Mount Mbololo, 41, including 18 in alcohol (Heller); Mount Umengo, 9 (Heller).

These specimens were all trapped in the heavy forests on the summits of the mountains. There appear to be no differences between skins from the two localities. A female from Mount Mbololo, November 5, contained five embryos; and one from Umengo, November 11, four embryos.

Measurements of specimens of Rattus dennix, R. taitæ, and R. stella kaimosæ.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry.	Skull: Condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Upper tooth row, alveoli.	Condition of teeth.
R. dennix.										
Uganda; Ruwenzori	172919	Female.	105	140	20.0	25.5	13.4	11.5	4.3	Considerably worn.
B. E. A.:										
Guas Ngishu	[1] 162888	Male....	100	151	20.5	25.6	13.6	11.6	4.8	Moderately worn.
Do	163349	Female.	96	132	19.5	24.3	12.8	10.8	4.2	Little worn.
Aberdares	183312	Male....	95	110	20.0	24.3	13.0	11.2	4.3	Moderately worn.
Do	163348	...do....	120	153	21.5	27.3	14.4	12.1	4.5	Much worn.
Mount Kenia	163367	...do....	105	151	21.5	26.0	13.7	11.5	4.4	Moderately worn.
Do	163369	...do....	99	155	21.0	26.4	13.0	11.4	4.6	Do.
Do	163370	...do....	89	.....	22.0	25.7	12.8	11.5	4.8	Do.
Do	163371	...do....	106	147	21.5	25.9	13.3	11.8	4.8	Do.
Do	163372	...do....	105	147	20.5	25.6	13.3	11.5	4.4	Do.
Do	163374	...do....	105	157	21.5	25.3	13.8	11.9	4.8	Do.
Do	163375	...do....	108	152	21.0	26.2	13.5	11.8	4.4	Considerably worn.
Do	163376	...do....	118	172	22.0	27.3	13.8	11.9	4.6	Much worn.
Do	163382	...do....	119	170	22.0	26.2	13.3	11.3	4.4	Moderately worn.
Do	163386	...do....	112	162	21.7	27.6	14.1	11.9	4.5	Do.
Do	163368	Female.	102	148	20.5	25.8	13.2	11.5	.....	Much worn.
Do	163373	...do....	95	142	20.5	25.6	13.7	11.7	4.6	Moderately worn.
Do	163377	...do....	101	147	21.5	25.5	13.7	11.7	4.8	Do.
Do	163379	...do....	108	157	21.5	26.2	13.4	11.6	4.3	Considerably worn.
Do	163381	...do....	103	150	21.0	25.4	13.2	11.7	4.6	Do.
Do	163396	...do....	102	157	20.5	26.0	13.3	11.3	4.7	Do.
R. taitæ.										
B. E. A.:										
Mount Mbololo	[2] 181797	Male....	105	138	22.0	26.1	13.1	11.0	4.4	Much worn.
Do	183413	...do....	105	130	23.5	26.4	13.2	11.3	4.4	Do.

Do	183414	...do....	100	135	24.0	26.4	13.0	10.9	4.5	Do.
Do	183415	...do....	110	125	23.0	27.3	13.5	11.9	4.5	Do.
Do	183416	...do....	105	129	24.0	25.5	13.4	11.1	4.5	Considerably worn.
Do	183427	...do....	106	133	24.0	26.5	13.2	11.0	4.3	Do.
Do	183428	...do....	110	132	22.5	26.3	13.4	11.3	4.3	Much worn.
Do	183430	...do....	100	130	23.5	24.9	12.8	10.9	4.4	Considerably worn.
Do	183431	...do....	100	122	23.0	25.2	13.0	11.9	4.4	Do.
Do	183422	Female.	112	120	22.0	25.3	12.8	11.3	4.4	Do.
Mount Umengo	183436	Male....	100	124	22.5	25.4	12.8	11.3	4.2	Much worn.
Do	183440	...do....	105	127	22.5	26.8	12.8	10.9	4.0	Do.
Do	183434	Female.	102	124	22.5	25.0	12.8	11.7	4.3	Considerably worn.
Do	183435	...do....	95	135	23.0	24.5	12.6	10.8	4.2	Moderately worn.
Do	183441	...do....	95	128	23.0	25.0	12.6	10.8	4.2	Do.
R. s. kaimosæ.										
B. E. A.:										
Kaimosa	183184	Male....	85	136	18.0	22.4	11.7	10.2	3.9	Considerably worn.
Do	[2] 181794	Female.	86	135	17.0	23.1	12.5	10.6	3.6	Do.
Do	183182	...do....	88	138	18.0	.....	.....	.....	3.8	Moderately worn.
Do	183183	...do....	90	132	17.0	24.0	12.8	10.5	3.8	Much worn.

[1] Type of *Epimys endorobæ* Heller.

[2] Type.

Externally this species is very much like *Rattus denniæ*, but the skulls of the two forms are very different. Skulls of *taitæ* are more slender and less angular than those of *denniæ;* they have smaller, flatter braincases and more sharply notched antorbital foramina.

For measurements of specimens see page 80.

RATTUS STELLA KAIMOSÆ (Heller).

Plate 22.

1912. *Epimys alleni kaimosæ* HELLER, Smithsonian Misc. Coll., vol. 59, No. 16, p. 7. July 5. (Kaimosi, Kakumega Forest, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Four, as follows:

BRITISH EAST AFRICA: Kaimosi (Heller).

I have had no specimens of typical *Rattus stella*[1] from the Ituri forest for comparison with these skins.

For measurements of specimens of *R. s. kaimosæ* see page 81.

RATTUS FUMATUS FUMATUS (Peters).

Plate 22.

1878. *Mus fumatus* PETERS, Mon.-ber. K. Preuss. Akad. Wiss. Berlin, March, 1878, p. 200. (Ukamba, British East Africa; type in Berlin Mus.)

1910. *Mus niveiventris* OSGOOD, Field Mus. Nat. Hist. Zool. ser., vol. 10, No. 2, p. 12. February. (Voi, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

1910. *Epimys niveiventris ulæ* HELLER, Smithsonian Misc. Coll., vol. 56, No. 9, p. 3. July 22. (Ulukenia Hills, British East Africa; type in U. S. Nat. Mus.)

1910. *Epimys nieventris ulæ* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 478, 484; London ed., pp. 485, 489, 495. (Part; references to Athi Plains.)

Specimens.—One hundred and ten, from the following localities:

BRITISH EAST AFRICA: Kapiti Plains, 47, including 9 in alcohol (Loring); Mount Gargues, 12, including 1 in alcohol (Heller); Mount Mbololo, 1 (Heller); Mount Sagalla, 5 (Heller); Mtoto Andei, 1 (Heller); Ndi, 11 (Heller); Ulukenia Hills, 27, including 11 in alcohol (Loring); Voi, 6 (Heller).

In British East Africa there are two fairly well-marked subspecies of a small rat of the subgenus *Myomys*, representing *Rattus verroxi*[2] of South Africa. These two forms were first distinguished by Osgood in 1910 and were named as new, with type-localities in the Taita Hills (*niveiventris*) and at Lake Elmenteita (*subfuscus*). The two subspecies apparently reach their extremes of differentiation at these points, and specimens from intermediate localities are less typical and show a blending of characters of the two races, chiefly marked by the absence or presence of a grayish undercolor to the hairs of the

[1] *Epimys stella* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 7, p. 590. July, 1911.

[2] *Mus verroxi* Smith, South Afr. Quart. Journ., vol. 2, p. 156, 1834 (*Epimys* or *Mus verreauxi* of authors). Reference verified for me by Oldfield Thomas at the British Museum.

otherwise white underparts. A subspecies, geographically intermediate, but most closely resembling the Taita Hills form, was named by Heller from the Ulukenia Hills (*ulæ*). The identity of this rock rat with the *Mus fumatus* of Peters was naturally unsuspected, but when Heller examined the types of East African mammals in Berlin he discovered that the type of *fumatus* is a young example of the East African form of *verroxi*, the *niveiventris* of Osgood. His manuscript notes on this type-specimen are as follows:

Mus fumatus Peters. Type No. 5277 Berlin Mus. Skin mounted. Skull with occipital part and floor of braincase lost. Very young; last molar just erupted. Locality Ukamba (probably Kitui). Hind foot, dry, from specimen, 20. Ears and all of tail except basal 2 inches lost. Color peculiar broccoli brown, belly and feet pure white. Interorbital region rounded, not beaded. Upper molars, 5; diastema, 5.7; nasals, 9.5 by 3; interorbital breadth, 3.7; condylo-incisive length of mandible, 16.

In the original description of *fumatus*, Peters gave the length of tail as 80 and the color of the underparts as "grauweiss." The immaturity of the specimen would account for both these differences from adult specimens of the East African representative of *Rattus verroxi*, but Heller has noted the belly of the type as "pure white."

I can not find characters by which to recognize three forms of this species in British East Africa, and although Ukamba specimens are somewhat intermediate in color between the two extremes, they are clearly nearest to the white-bellied subspecies of the Taita Hills. The skins from Mount Gargues average slightly grayer above than the specimens from Ulukenia Hills and other localities, but since the series is small and the differences trivial, it does not seem advisable to separate them from *R. fumatus fumatus*. They have the hairs of the underparts as clearly white to the bases as do the skins from Taita Hills. The range of the animal probably will be found to be practically continuous in rocky localities when more collecting has been done east of Mount Kenia.

Heller found four embryos in a female collected on Mount Gargues, September 1; and two embryos in a female from Ndi, November 3.

For detailed measurements of this subspecies and other forms of the subgenus *Myomys* see page 84.

RATTUS FUMATUS SUBFUSCUS (Osgood).

1910. *Mus niveiventris subfuscus* Osgood, Field Mus. Nat. Hist. Zool. ser., vol. 10, No. 2, p. 12. February. (Lake Elmenteita, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

1910. *Epimys nieventris ulae* Roosevelt, African Game Trails, Amer. ed., p. 478; London ed., p. 489. (Part; references to Sotik, Naivasha, and Rift Valley.)

Specimens.—Seventy-one, from localities as follows:

British East Africa: Engare Narok River, 1 (Loring); Lake Naivasha, south end, 5 (Mearns, Loring); Naivasha Station, 27, including 6 in alcohol (Loring, Mearns); Oljoro O Nyon River, 4

Measurements of rats of the subgenus Myomys from British East Africa.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry.	Skull: Condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Upper tooth row, alveoli.	Condition of
Rattus fumatus fumatus.										
Mount Sagalla	183513	Male	105	143	20.5	27.5	14.0	11.6	5.0	Much worn.
Do	183516	do	102	138	21.5	26.6	13.6	11.0	5.1	Considerably worn.
Do	183514	Female	102	140	20.5	26.5	12.9	11.1	5.0	Do.
Do	183809	do	100	133	21.5	26.1	13.4	11.0	4.9	Do.
Voi	183495	Male	100	140	20.5	26.2	12.8	10.8	4.8	Moderately worn.
Do	183496	do	100	143	22.0	26.2	13.6	11.3	4.9	Considerably worn.
Do	183498	do	100	136	20.5	25.6	13.2	11.2	4.5	Moderately worn.
Do	183499	do	96	141	21.0	25.6	13.2	10.9	4.7	Do.
Ndi	183504	do	112	157	21.5	27.5	13.7	11.3	4.9	Much worn.
Do	183502	Female	95	.....	21.0	25.5	13.6	11.3	4.6	Moderately worn.
Do	183506	do	105	153	23.0	28.4	14.2	11.8	5.2	Much worn.
Do	183507	do	105	153	21.0	27.7	13.6	11.2	4.8	Do.
Do	183510	do	105	141	22.0	25.6	13.1	10.8	4.8	Moderately worn.
Do	183511	do	100	141	21.0	25.5	13.3	11.1	5.1	Do.
Ulukenia Hills	162886	Male	108	142	21.5	26.0	13.4	11.9	4.7	Considerably worn.
Do	164225	do	106	138	20.0	25.8	13.7	11.7	4.5	Do.
Do	164232	do	103	135	21.0	26.1	13.2	11.4	4.8	Do.
Do	164234	do	106	137	21.0	26.9	13.7	11.2	4.8	Do.
Do	162887	Female	88	128	19.5	23.9	13.0	10.9	4.3	Moderately worn.
Do	164235	do	100	130	19.5	25.1	12.8	10.8	4.8	Considerably worn.
Do	164237	do	93	123	20.0	23.8	12.2	11.0	4.5	Moderately worn.
Kapiti Plains	161818	Male	97	124	21.5	25.3	13.5	11.5	4.8	Do.
Do	161827	do	99	134	21.5	25.8	13.3	10.9	4.9	Do.
Do	161833	do	98	130	21.5	25.6	13.3	.....	5.1	Much worn.
Do	161834	do	92	128	21.0	24.4	12.9	11.0	4.8	Moderately worn.
Do	161835	do	98	137	21.5	25.7	13.3	11.2	5.3	Much worn.

Do	161825	Female..	105	136	20.0	26.0	13.6	11.0	4.8	Considerably worn.
Do	161829	...do.....	116	136	21.5	26.5	14.3	.....	5.0	Much worn.
Do	161836	...do.....	100	127	20.0	25.2	13.0	10.9	5.0	Moderately worn.
Mount Gargues	183485	Male....	102	146	20.5	26.1	13.8	11.3	4.8	Much worn.
Do	183486	...do.....	100	121	22.5	25.8	13.2	11.3	4.7	Moderately worn.
Do	183484	Female..	105	160	22.5	.....	13.3	.....	4.8	Much worn.
Do	183494	...do.....	95	135	22.0	25.2	13.7	11.4	4.5	Moderately worn.
Rattus fumatus subfuscus.										
Naivasha Station	162389	Male....	100	127	20.5	24.7	13.2	11.2	4.8	Do.
Do	162394	...do.....	105	142	22.0	26.3	13.8	11.3	4.8	Do.
Do	162504	...do.....	109	150	20.5	25.9	13.4	11.3	4.8	Do.
Do	162506	...do.....	110	144	21.5	27.2	13.2	11.8	4.9	Do.
Do	162393	Female..	111	142	21.0	27.3	13.8	.....	4.8	Considerably worn.
Do	162496	...do.....	106	139	21.5	26.3	14.0	11.1	4.7	Moderately worn.
Do	162501	...do.....	103	142	22.0	26.0	13.6	11.8	4.8	Do.
Do	162502	...do.....	101	141	21.5	25.8	13.3	11.6	4.8	Do.
Do	162509	...do.....	99	135	20.5	25.5	13.6	11.5	4.8	Do.
Southern Guaso Nyiro	162473	Male....	105	155	22.0	26.5	13.3	11.3	4.8	Do.
Do	162479	...do.....	100	148	21.5	25.4	13.8	11.2	4.5	Do.
Do	162480	...do.....	107	141	21.5	25.9	13.0	11.2	4.6	Do.
Do	162483	...do.....	106	144	22.0	25.5	13.3	11.5	4.8	Do.
Do	162472	Female..	100	136	20.5	25.1	12.9	11.0	4.6	Considerably worn.
Do	162476	...do.....	115	149	21.5	26.6	13.3	11.3	4.5	Do.
Do	162478	...do.....	110	145	21.5	25.3	12.9	11.3	4.7	Do.
Do	162481	...do.....	105	141	21.5	25.3	12.8	11.3	4.9	Moderately worn.
Rattus tana.										
Tana River	[2] 36055	...do.....	.....	.....	21.0	25.1	13.7	12.0	4.8	Do.

[1] Type of *Epimys niviventris ulæ.*

[2] Type.

(Loring, Heller); Southern Guaso Nyiro River, 32, including 6 in alcohol (Loring, Mearns); Telek River, Sotik. 2 (Heller).

This is the subspecies of *fumatus* with the gray undercolor to the hairs of the otherwise white underparts. Around Naivasha the form is well marked, but specimens from the Southern Guaso Nyiro and Sotik sometimes have very little of the gray undercoloring on the belly, and resemble the Taita Hills and Ukamba skins. There are no pronounced differences in size or any other characters of consequence beyond this coloration of pelage to separate the two subspecies.

Never found except among rocks; we always found it where there were cliffs or stony koppies. Lives in crevices in the rocks and along the ledges of the cliffs. Nocturnal. (Roosevelt, African Game Trails, p. 478.)

RATTUS TANA (True).

Plate 22.

1893. *Mus tana* True, Proc. U. S. Nat. Mus., vol. 16, p. 602. October 25. (Along the Tana River, between the coast and Hameye, British East Africa; type in U. S. Nat. Mus.)

1909. *Mus tana* Lyon and Osgood, Bull. 62, U. S. Nat. Mus., p. 155. January 28.

Specimen.—One, the type:

British East Africa: Tana River, between the coast and Hameye (Chanler and von Höhnel).

The type-specimen of *Rattus tana* was originally preserved in alcohol, but was made up into a skin after about one year of immersion. The coloration is evidently considerably modified by this treatment and satisfactory comparison with other skins is impossible. True described it as "brownish-gray above, hoary below; feet white," which is about as accurate an account as can be given. There is a distinct undercolor of gray below, much as in many skins of *R. f. subfuscus*, but all the hairs of the underparts are broadly tipped with a light color which was presumably white before its discoloration. The tail in the dry skin measures 85 millimeters in length, but was recorded by True as 93, in the alcoholic specimen before skinning. The skull shows the type to be an adult specimen and has the teeth moderately worn. The measurements as given by True are probably of little value, as the specimen is much shrunken and was probably preserved in spirits much too strong for the purpose. The tail in the dry skin has been separated from the body and sewed in place, so that it is obviously considerably shortened from its original condition.

A careful comparison of the type of *R. tana* with all the forms of *Rattus* from East Africa in the collection proves it to be almost certainly a member of the subgenus *Myomys* closely related to *Rattus fumatus*. Until a satisfactory series of rats of this group is collected from the Tana River country it will be impossible to settle

the exact status of *R. tana*. My own belief is that the form represented will prove to be a geographical race of *fumatus*. On the other hand skulls of certain specimens of *fumatus* are almost indistinguishable from skulls of some of the multimammate rats of the subgenus *Mastomys*, and this is particularly true of specimens in the "young adult" stage like the type skull of *tana*. The type of *tana* is recorded as a female, but no trace of mammæ can be found in the dry skin.

RATTUS COUCHA ISMAILIÆ (Heller).

Plate 23.

1914. *Epimys concha* (sic) *ismailiæ* HELLER, Smithsonian Misc. Coll., vol. 63, No. 7, p. 9. June 24. (Gondokoro, Uganda; type in U. S. Nat. Mus.)

Specimens.—Thirty-six, from localities as follows:

UGANDA: Gondokoro, 18, including 4 in alcohol (Loring); Ledgus, 1 in alcohol (Loring); Lombeki River, 1 (Loring); Mnyouri Jardin 1 (Loring); Nimule, 15, including 6 in alcohol and 1 odd skull (Loring, Heller).

The rats of this group, the subgenus *Mastomys*, known as the multimammate species, are among the most difficult of small mammals to arrange satisfactorily into species or subspecies. What appears to be individual variation within a single form is usually far more conspicuous than the characters marking valid geographical races. The difference in size, and frequently in color, between fully adult examples and the older, aged individuals is very great; and the change in the form and appearance of the skull throughout life is extreme. It is only when large series are available and when the skins and skulls are arranged according to age, as determined by the condition of the teeth, that the great variations are in a measure explained. My conclusions are that within the territory covered by this report only a single species of *Mastomys* is found, and that this species may be separated into several geographical races, no two valid forms occupying the same region. With smaller series of specimens one might easily be misled into describing several species, based mainly on size, form of the skull, and the coloration of the underparts. Size of body and size and form of skull are explained in almost every case with our material by age; and the color of the belly must frequently be accounted as purely individual variation, except in cases when it is plainly a question of condition of pelage. I have not seen authentic specimens of the two forms described by Dollman from Lake Baringo[1] which he found ranging together, and one of which, the smaller *effectus*, he states is distributed over the same territory occupied by *Rattus coucha ugandæ*. I can not help but believe, after my experience with the group, that these two

[1] *Epimys effectus* and *E. evelyni* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 7, pp. 524 and 526. May, 1911.

names represent large and small individuals of the same subspecies, perhaps to be recognized as a valid race of *coucha* inhabiting the Baringo region.

The Gondokoro race of *coucha*, described by Heller as *Epimys coucha ismailiæ*, is not a very well-marked form and differs from *Rattus coucha ugandæ* only in its brighter, more cinnamon rufous coloration, and smaller size, both of which are average characters, not entirely constant throughout the series. The color of the underparts is uniformly creamy whitish, more or less mixed with the gray of the underfur; no individuals with drab-colored bellies, not uncommon in other races, are in the collection. The largest specimens, and also the oldest as shown by the condition of the skulls and teeth, are decidedly grayish in color, with very little of the cinnamon tones characteristic of the average younger adult specimens of the race. Our specimens of this subspecies are all from the east side of the Nile in extreme northwestern Uganda, between Gondokoro and Nimule.

For detailed measurements of specimens of this subspecies, and of other forms of the subgenus *Mastomys*, see tables, pages 90–93.

RATTUS COUCHA UGANDÆ (de Winton).

1897. *Mus ugandæ* DE WINTON, Ann. and Mag. Nat. Hist., ser. 6, vol. 20, p. 317. September. (Entebbe, Uganda; type in British Museum.)

1910. *Epimys ugandæ* ROOSEVELT, African Game Trails, Amer. ed., p. 473; London ed., p. 485.

1918. *Rattus coucha ugandæ* HOLLISTER, Smithsonian Misc. Coll. vol. 68, No. 10, p. 1. January 16.

Specimens.—Fifty-three, from the following localities:

LADO: Rhino Camp, 11, including 3 odd skulls (Loring).

UGANDA: Hoima, 2, including 1 in alcohol and 1 odd skull (Loring); Kabula Muliro, 9, including 2 in alcohol and 1 odd skull (Loring); Kampala, 5, including 3 in alcohol (Mearns, Heller, Loring); Kikanda, 5 (Loring); Kikandwa, 2 (Loring); Kisimbiri, 2 (Loring); Kisingo, 9 (Loring); Lialo, 8 (Loring).

The distribution of this race is doubtless continuous between the Lado and the northern shores of Victoria Nyanza by way of eastern Belgian Congo and the Ruwenzori country. How far it extends northward on the eastern side of the White Nile before blending into the Gondokoro form, *Rattus coucha ismailiæ*, is not known, as no specimens are available from this district between the Victoria Nile and Nimule. The large, brown-bellied skins of *ugandæ* in the collection are usually those specimens with the largest, most angular skulls in which the teeth are very much worn. The majority of the specimens have grayish-white underparts.

RATTUS COUCHA TINCTUS Hollister.

Plate 23.

1918. *Rattus coucha tinctus* Hollister, Smithsonian Misc. Coll., vol. 68, No. 10, p. 1. January 16. (Kaimosi, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Nineteen, as follows:

British East Africa: Kaimosi (Heller).

This large, dark colored subspecies of *Rattus coucha* is known only from the type locality.

Heller found 10, 12, and 13 embryos in females of the type series collected in January, 1912.

Geographical races of *coucha* from Victoria Nyanza not represented in the United States National Museum collections are *Rattus coucha cuninghamei* (Wroughton)[1] described from Chivi Island and inhabiting other islands in the lake as well; and *Rattus coucha victoriæ* (Matschie)[2] from Mwanza, south coast of Speke Gulf. The former is described as having a very short tail and buffy white underparts; and *victoriæ* is said to be pure grayish white below. In *tinctus* the underparts are only slightly lighter than the flanks and are intense dark grayish buff, drab, or tawny olive.

RATTUS COUCHA NEUMANI (Heller).

Plate 23.

1912. *Epimys coucha neumani* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 8. July 5. (Neuman's Boma, Northern Guaso Nyiro River, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Four, as follows:

British East Africa: Neuman's Boma (Heller).

The material representing this subspecies is far from satisfactory. No one of the four specimens is sufficiently old to show the form or size of the skull with extreme age; the teeth of the type, the oldest specimen, are only moderately worn. The skins are all decidedly grayish in color, with little rufous or buffy above, and with the underparts washed with buff.

RATTUS COUCHA PANYA (Heller).

Plate 24.

1910. *Epimys panya* Heller, Smithsonian Misc. Coll., vol. 56, No. 9, p. 2. July 22. (Juja Farm, Athi Plains, British East Africa; type in U. S. Nat. Mus.)

1910. *Epimys panya* Roosevelt, African Game Trails, Amer. ed., pp. 473, 478; London ed., pp. 485, 489.

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[1] *Mus cuninghamei* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 1, p. 256. March, 1908.

[2] *Mus* (*Epimys*) *microdon victoriæ* Matschie, Sitz.-ber. Ges. nat. Freunde Berlin, 1911, No. 8, p. 342, October.

Measurements of rats of the subgenus Mastomys.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry.	Skull: Condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Upper tooth row, alveoli.	Condition of molars.
R. c. ismailiæ.										
Uganda:										
Gondokoro	165102	Male	106	115	23	26.8	13.6	11.7	4.8	Moderately worn.
Do	165106	do	107	122	22	25.2	14.0	11.7	4.6	Do.
Do	165108	do	108	115	22	26.3	12.9	11.3	4.8	Do.
Do	165093	Female	113	99	25	27.8	13.6	12.2	5.6	Do.
Do	165104	do	93	95	21	24.9	13.0	11.0	4.8	Do.
Do	165111	do	105	111	22	26.9	12.8	11.3	5.1	Do.
Mnyouri Jardin	165019	do	104	107	21	24.9	13.0	11.0	4.8	Do.
Lombeki River	165018	Male	96	96	21	24.2	12.6	11.1	5.1	Do.
Nimule	165015	do	99	101	21	25.0	13.0	11.3	4.8	Do.
Do	165010	Female	99	108	22	25.7	13.3	11.3	5.0	Do.
Do	165011	do	107	110	22	27.2	13.4	11.8	4.8	Do.
Do	165012	do	103	100	21	26.0	13.4	11.7	5.0	Do.
Do	165013	do	102	112	22	26.8	13.6	11.3	4.8	Do.
Do	165016	do	99	96	22	24.2	12.7	11.2	4.8	Little worn.
R. c. ugandæ.										
Lado:										
Rhino Camp	165007	Male	114	108	22	27.2	13.9	11.4	4.9	Moderately worn.
Do	165009	do	119	123	25	.....	14.0	12.0	5.1	Do.
Do	165002	Female	117	105	22	27.0	14.3	11.9	4.9	Do.
Do	165004	do	110	115	22	26.7	13.8	11.5	5.0	Do.
Uganda:										
Kikanda	164998	Male	131	130	24	29.0	14.5	12.1	4.9	Considerably worn.
Do	164999	do	118	108	21	26.7	13.6	11.2	4.7	Do.
Do	165000	do	124	128	22	28.0	13.8	11.6	4.8	Do.
Do	165001	Female	122	125	22	27.5	14.1	11.8	4.9	Do.
Lialo	164994	Male	115	112	22	28.3	13.4	11.9	4.8	Do.
Kisingo	164983	do	125	116	22	28.2	14.3	12.0	4.7	Do.
Do	164986	do	115	116	23	26.8	13.7	12.1	4.8	Moderately worn.

Do.	164987	...do.....	125	114	22	29.4	14.4	11.8	5.0	Considerably worn.
Do.	164988	Female..	105	108	21	26.7	13.8	11.4	5.2	Moderately worn.
Do.	164990	...do.....	107	117	22	26.7	13.3	11.9	5.0	Do.
Kabula Muliro	164981	Male.....	120	114	21	28.1	14.1	12.3	4.9	Considerably worn.
Do.	165087	...do.....	157	138	26	33.2	17.5	13.5	4.9	Very much worn.
Do.	164980	Female..	123	110	21	27.8	14.3	11.8	4.6	Moderately worn.
Kikandwa	165090	...do.....	147	125	25	29.8	14.4	12.7	5.3	Considerably worn.
Kisimbiri	165094	Male.....	140	124	24	30.8	14.7	12.9	5.1	Do.
Do.	165093	Female..	127	118	24	28.7	13.8	12.2	5.1	Do.
R. c. tinctus.										
B. E. A.:										
Kaimosi	[1] 183294	Male.....	160	133	26	33.3	16.8	13.6	5.5	Moderately worn.
Do.	183295	...do.....	160	148	30	35.0	17.9	14.3	5.8	Much worn.
Do.	183298	...do.....	145	130	26	31.3	14.7	12.8	5.4	Moderately worn.
Do.	183302	...do.....	130	120	24	25.5	13.9	12.3	5.0	Do.
Do.	183309	...do.....	145	128	26	31.8	16.3	12.8	5.1	Considerably worn.
Do.	183311	...do.....	120	120	24	28.6	13.6	12.2	4.9	Moderately worn.
Do.	183724	...do.....	125	119	22	28.7	13.5	11.7	4.8	Do.
Do.	183291	Female..	100	112	23	27.4	13.3	11.8	5.1	Do.
Do.	183297	...do.....	135	129	25	28.9	14.5	12.3	5.2	Do.
Do.	183300	...do.....	140	130	27	29.7	14.6	12.7	5.3	Do.
Do.	183303	...do.....	115	108	24	27.1	13.2	12.2	5.0	Do.
Do.	183305	...do.....	130	127	25	30.3	14.9	12.8	5.2	Do.
Do.	183306	...do.....	160	143	25	34.0	17.4	13.5	5.3	Much worn.
Do.	183307	...do.....	142	142	24	32.1	16.1	12.7	5.3	Do.
Do.	183310	...do.....	140	131	26	32.5	16.7	13.2	5.6	Do.
R. c. neumani.										
B. E. A.: Neuman's Boma	[1] 181795	Male.....	115	128	26	28.4	13.9	12.2	5.0	Moderately worn.
R. c. panya.										
B. E. A.:										
Nyeri	163675	...do.....	116	113	23	28.7	14.0	11.7	5.1	Do.
Do.	163676	...do.....	114	110	23	28.2	13.3	11.8	5.2	Do.
Do.	163677	Female..	130	115	24	29.3	14.1	12.0	5.4	Do.
Wambugu	163681	Male.....	140	128	25	30.1	14.6	12.0	5.1	Considerably worn.

[1] Type.

Measurements of rats of the subgenus Mastomys—Continued.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry.	Skull: Condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Upper tooth row, alveoli.	Condition of molars.
B. E. A.—Continued.										
Wambugu	163723	Male	112	97	22	28.9	14.2	12.9	4.9	Moderately worn.
Do	163688	Female	146	140	24	30.3	15.1	12.0	5.0	Do.
Do	163736	...do	124	115	22	26.9	13.8	12.2	4.7	Do.
Fort Hall	163691	Male	116	97	23	28.7	13.4	11.8	4.9	Do.
Do	163701	...do	122	126	23	28.8	14.1	12.0	4.9	Considerably worn.
Do	163702	...do	131	130	23	30.6	14.0	12.2	5.3	Do.
Do	163710	Female	127	113	22	29.3	14.3	11.9	5.0	Much worn.
Saba Saba	163746	Male	127	128	24	31.0	14.7	12.5	5.4	Considerably worn.
Do	163747	...do	134	119	22	30.3	14.7	12.7	5.0	Do.
Do	163749	Female	124	123	24	29.7	14.3	12.3	5.1	Do.
Juja Farm	161859	Male	109	104	22	27.3	13.8	12.0	5.1	Moderately worn.
Do	161865	...do	129	112	.....	29.2	14.3	12.6	5.2	Do.
Do	161884	...do	126	128	24	28.9	14.3	12.6	5.3	Do.
Do	161886	...do	119	119	22	27.1	13.8	11.6	4.8	Do.
Do	161892	...do	113	104	22	28.0	13.9	12.2	5.2	Do.
Do	161895	...do	130	120	23	30.9	15.6	12.9	5.2	Considerably worn.
Do	161802	Female	130	128	23	28.3	14.6	12.3	5.1	Moderately worn.
Do	161866	...do	131	110	23	28.0	13.7	11.7	5.3	Do.
Do	161871	...do	129	117	21	29.2	14.9	12.3	5.1	Considerably worn.
Do	161883	...do	108	108	22	27.2	13.8	11.8	5.0	Moderately worn.
Do	161888	...do	108	119	22	27.2	13.4	12.2	4.8	Do.
R. c. hildebrandti.										
B. E. A.:										
Mtoto Andei	181651	Male	120	112	22	28.8	15.1	12.2	5.4	Much worn.
Do	181652	...do	125	118	23	28.8	14.9	12.7	5.3	Do.
Do	181646	Female	120	112	22	28.3	14.3	12.0	5.4	Considerably worn.
Do	181647	...do	130	112	22	29.4	14.3	12.2	5.4	Much worn.
Do	181649	...do	120	104	21	27.6	14.3	11.9	4.8	Do

Ndi	183249	Male	110	119	22	27.0	13.3	11.8	4.8	Considerably worn
Do	183250	...do	105	110	23	25.7	12.7	11.3	5.1	Moderately worn.
Voi	183287	...do	125	123	24	29.5	14.3	12.7	5.3	Considerably worn
Mount Mbololo	183263	...do	112	108	23	28.1	13.6	12.4	5.3	Do.
Do	183255	...do	130	118	23	28.3	14.8	12.1	4.9	Do.
Do	183260	Female	120	116	21	28.4	14.4	12.1	5.1	Much worn.
Mount Sagalla	183268	Male	115	117	23	27.4	13.7	11.9	5.2	Moderately worn.
Do	183271	...do	125	124	24	29.9	14.9	12.6	5.4	Much worn.
Do	183272	...do	125	128	23	29.7	14.9	12.5	5.2	Do.
Do	183275	...do	120	121	23	29.8	14.7	12.0	5.2	Considerably worn.
Do	183276	...do	120	118	23	28.8	15.2	12.5	5.2	Much worn.
Do	183278	...do	115	120	24	28.5	14.0	11.8	5.2	Considerably worn.
Do	183284	...do	130	131	24	30.2	15.7	12.9	5.3	Do.
Do	183273	Female	115	118	23	28.9	15.2	12.3	5.2	Much worn.
Do	183274	...do	120	119	23	28.8	13.3	11.9	5.1	Moderately worn.
R. c. durumæ.										
B. E. A.:										
Maji-ya-chumvi	183205	Female	108	128	23	28.5	14.1	12.4	5.6	Do.
Mariakani	183246	Male	125	124	24	29.4	14.8	12.6	5.4	Do.
Mazeras	[1] 181796	...do	135	118	24	30.7	14.8	12.3	5.4	Do.
Do	183208	...do	128	114	23	28.1	14.1	12.2	5.3	Do.
Do	183216	...do	115	117	24	28.1	14.1	11.9	5.4	Do.
Do	183217	...do	112	115	24	28.7	14.2	12.3	5.5	Do.
Do	183218	...do	120	110	21	27.5	13.8	11.9	5.2	Do.
Do	183220	...do	110	106	23	26.3	13.7	11.9	5.1	Do.
Do	183226	...do	115	105	23	28.2	13.8	11.9	5.4	Do.
Do	183227	...do	115	114	22	28.1	14.2	12.1	5.3	Do.
Do	183228	...do	116	118	23	28.4	14.1	12.2	5.4	Do.
Do	183231	...do	120	120	24	28.9	13.9	12.1	5.3	Do.
Do	183238	...do	130	103	22	29.5	15.0	12.5	5.8	Considerably worn.
Do	183211	Female	105	106	22	25.8	13.2	11.5	5.3	Moderately worn.
Do	183214	...do	130	123	24	28.7	14.1	12.3	5.5	Do.
Do	183229	...do	125	114	22	28.0	14.1	12.0	5.3	Do.
Do	183234	...do	118	105	22	27.8	12.9	11.7	5.2	Do.

[1] Type.

Specimens.—One hundred and sixty-nine, from the following localities:

British East Africa: Fort Hall, 22, including 2 in alcohol (Loring); Juja Farm, 46, including 5 in alcohol (Loring, Mearns); Kapiti Plains, 1 (Mearns); Lake Naivasha, 2 (Mearns, Loring); Meru Boma, 6 in alcohol (Heller); Mount Kenia, west slope, 3, including 2 in alcohol (Heller); Njoro Osolali, 1 (Loring); Nyeri, 7, including 1 in alcohol (Loring); Saba Saba, 16, including 3 in alcohol (Loring); Southern Guaso Nyiro, 1 (Loring); Suswa Plain, 2 (Heller); Ulukenia Hills, 16, including 4 in alcohol (Loring); Wambugu, 46, including 5 in alcohol (Loring, Mearns).

This rat appears to be the most common species about fields and dwellings throughout its range in British East Africa. It is an exceedingly variable species and the large series of specimens listed above contains skins presenting a wide degree of difference between the darkest, almost blackish animals and the palest, buffy brown individuals. There are skins from almost every general locality with light grayish or creamy white underparts and others with buffy or even drab bellies. Loring found seven embryos in a female from Juja Farm, May 18, and 10 in another female from the same place May 21.

Specimens of multimammate rats from Meru Boma and Fort Hall have been listed by Doctor Lönnberg[1] under *Epimys effectus* Dollman, described from Baringo. I can not find sufficient difference between skins from the Athi Plains and other southern localities and those from the vicinity of Kenia to recognize two races in our collection.

RATTUS COUCHA HILDEBRANDTII (Peters).

1878. *Mus hildebrandtii* Peters, Mon.-ber. K. Preuss. Akad. Wiss. Berlin, 1878, p. 200. (Ndi, Taita, British East Africa; type in Berlin Museum.)

Specimens.—Sixty-six, from localities as follows:

British East Africa: Macharra, Taita Hills, 1 (Heller); Mount Mbololo, 18, including 8 in alcohol (Heller); Mount Sagalla, 19, including 2 in alcohol (Heller); Mount Umengo, 2 (Heller); Mtoto Andei, 12 (Heller); Ndi, 6 (Heller); Voi, 5 (Heller).

German East Africa: Mount Kilimanjaro, 3 (Abbott).

The series of specimens of this subspecies of *Rattus coucha* presents a very uniform appearance in color and size. The upperparts are a dull reddish brown and the underparts rather light grayish buff. Heller examined the type-specimen in the Berlin Museum and made the following manuscript notes:

Mus hildebrandtii Peters. Type. Skull perfect; old, molars worn flat. Skin stuffed, ears and tail perfect. Color quite brownish, not gray; dorsal region blackish; sides buffy ochraceous; belly suffused with buff. Foot on skin measures 23 millimeters. Labeled Noi, Taita. The "Noi" doubtless means Ndi.

[1] Kungl. Sv. Vet. Akad. Handl., vol. 48, No. 5, p. 92. 1912.

RATTUS COUCHA DURUMÆ (Heller).

Plate 24.

1912. *Epimys coucha durumæ* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 9. July 5. (Mazeras, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Sixty, from localities as follows:

British East Africa: Changamwe, 9, including 2 in alcohol (Mearns); Maji-ya-chumvi, 3 (Heller); Mariakani, 2 (Heller); Mazeras, 46, including 7 in alcohol (Heller).

The specimens of this subspecies average much grayer in color than those of the nearly related *R. c. hildebrandtii*. Breeding records are noted on labels of females from Mazeras as follows: December 22, seven embryos; December 23, eight embryos; December 24, eleven large embryos.

Genus MUS Linnæus.

1758. *Mus* Linnæus, Syst. Nat., ed. 10, vol. 1, p. 59. (*M. musculus.*)

Curiously enough the common house mouse (*Mus musculus*) is not represented in our British East African collections. The native species of the genus have so far, it would seem, held their territory from this invader.

For detailed measurements of specimens of *Mus* see pages 98–101.

MUS TRITON TRITON (Thomas).

Plate 24.

1909. *Leggada triton* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 548. December. (Kirui, Elgon, British East Africa; type in British Museum.)

1910. *Leggada naivashæ* Heller, Smithsonian Misc. Coll., vol. 54, [No. 1924], p. 2. February 28. (Base of Aberdare Mountains, eastern edge of Naivasha Plains, British East Africa; type in U. S. Nat. Mus.)

1910. *Mus* (*Leggada*) *triton naivashæ* Roosevelt, African Game Trails, Amer. ed., p. 473; London ed. p. 485.

Specimens.—Two hundred and sixteen, from the following localities:

Uganda: Kikandwa, 3, including 1 in alcohol (Loring); Kisimbiri, 2 (Loring).

British East Africa: Aberdare Mountains, 5, including 1 in alcohol (Heller); Burgunett River, Meru Road, 1 (Heller); Fort Hall, 1 in alcohol (Loring); Isiola River, 1 (Heller); Kaimosi, 51, including 28 in alcohol (Heller); Kakumega, 6 (Heller); Kibabe, Kisumu, 1 (Heller); Lake Naivasha, 27, including 5 in alcohol (Loring); Lukosa River, 5, including 2 in alcohol (Heller); Mission, Kisumu, 1 (Heller); Mount Kenia, west side, 46, including 31 in alcohol (Loring, Mearns); Nyangnori, 1 (Heller); Nyeri, 36, including 25 in alcohol (Loring); Nyuku River, Meru Road, 1 in alcohol (Heller); Nzoia River, Guas Ngishu Plateau, 8, including 6 in alcohol (Heller); Wambugu, 20, including 6 in alcohol (Loring).

There is much purely individual variation in the amount of blackish on the feet and tail. I can find no characters by which to distin-

guish as a separate subspecies the specimens representing Heller's *Leggada naivashæ*. Specimens from Kisimbiri and Kikandwa, on the upper Victoria Nile, evidently slightly approach in color *Mus triton fors* of Ruwenzori, but are not sufficiently different to separate from *triton* proper. In this connection it is interesting to note that the names *triton* and *fors* as members of this genus, were published simultaneously, and *triton* has only a single line priority. The name *fors* is usually cited from the Ruwenzori report,[1] with Thomas and Wroughton as its authorities. As a matter of fact it was published as a valid name by Thomas in December, 1909, in the description of *Leggada triton*, where the greatest length of the skull of the type specimen is given.

MUS TRITON MURILLA (Thomas).

1910. *Leggada triton murilla* THOMAS, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 91. January. (Machakos, British East Africa; type in British Museum.)

1910. *Mus (Leggada) triton murillus* ROOSEVELT, African Game Trails, Amer. ed., p. 473; London ed., p. 485.

Specimens.—Eighteen, from localities as follows:

BRITISH EAST AFRICA: Fort Hall, 1 (Loring); Kamiti Farm, Athi Plains, 1 (Loring); Kapiti Plains, 12, including 2 in alcohol (Loring); Oljoro O Nyon River, 1 (Loring); Southern Guaso Nyiro River, 1 (Loring); Thika River, 2 (Loring).

This gray form of *triton* is evidently restricted to the region south of the upper Tana and Athi rivers, extending westward to the Mau Escarpment. It is a very well marked subspecies.

MUS EMESI Heller.

Plate 25.

1911. *Mus musculoides emesi* HELLER, Smithsonian Misc. Coll., vol. 56, No. 17, p. 5. February 28. (Kabula Muliro, Uganda; type in U. S. Nat. Mus.)

Specimens.—Twenty, from the following localities:

UGANDA: Hoima, 2, including 1 in alcohol (Loring); Kabula Muliro, 1 (Loring); Kikanda, 1 in alcohol (Loring); Kikandwa, 4, including 1 in alcohol (Loring); Kisimbiri, 8, including 3 in alcohol (Loring); Kisingo, 3 in alcohol (Loring); Nkyanuna, 1 (Loring).

This white-bellied mouse is clearly related to *M. triton*, but must be classed as a full species as it is found ranging with that form at localities in western Uganda. Its range appears to be much more restricted than is the distribution of *triton*. In size, the skull of *emesi* is intermediate between skulls of *triton* and those of *bellus* and *gratus*.

For measurements of specimens see page 99.

[1] Trans. Zool. Soc. London, vol. 19, p. 506. March, 1910.

MUS BELLUS ENCLAVÆ Heller.

Plate 25.

1911. *Mus bellus enclavæ* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 8. February 28. (Rhino Camp, Lado; type in U. S. Nat. Mus.)

Specimens.—Twenty-five, from localities as follows:

Lado: Rhino Camp, 21, including 10 in alcohol (Loring).

Uganda: Butiaba, 3, including 1 in alcohol (Loring, Heller); Kampala, 1 (Loring).

This dark form of *bellus* seems to be confined to the west side of the Nile in the latitude of the type locality, Rhino Camp; but further south, in Uganda, it is found in the region between Albert Nyanza and Victoria Nyanza. It is readily separable from *Mus emesi* by its smaller size and smaller skull.

For measurements see page 99.

MUS BELLUS GONDOKORÆ Heller.

Plate 25.

1911. *Mus bellus gondokoræ* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 8. February 28. (Gondokoro, Uganda; type in U. S. Nat. Mus.)

Specimens.—Two, as follows:

Uganda: Gondokoro, 1 (Loring); Ledgus, 1 in alcohol (Loring).

This is a very light colored form of *bellus,* contrasting sharply with the dark subspecies from Lado and the Albert Nyanza region.

MUS BELLUS BELLUS (Thomas).

1910. *Leggada bella* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 87. January. (Machakos, British East Africa; type in British Museum.)

1910. *Mus* (*Leggada*) *bellus* Roosevelt, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

Specimens.—Thirty-five, from the following localities:

British East Africa: Archer's Post, 1 (Heller); Engare Ndare River, 1 (Heller); Fort Hall, 1 (Loring); Juja Farm, 6 (Loring); Kapiti Plains, 14, including 11 in alcohol (Loring, Mearns); Meru, 2 in alcohol (Heller); Mount Gargues, 3 (Heller); Mount Lololokwi, 3 (Heller); Northern Guaso Nyiro River, 1 in alcohol (Heller); Saba Saba, 1 (Loring); Thika River, 1 (Loring); Ulukenia Hills, 1 (Loring).

MUS BELLUS VICINUS (Thomas).

1893. *N*[*annomys*] *minimus* True, Proc. U. S. Nat. Mus., vol. 16, p. 603. (Specimen from Wange, Manda Island; not *N. minimus* Peters, 1852; not *Mus minimus* White 1789.)

1910. *Leggada bella vicina* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 88. January. (Takaungu, near Mombasa, British East Africa; type in British Museum.)

Specimens.—Seven, from localities as follows:

British East Africa: Changamwe, 1 (Mearns); Mariakani, 1 (Heller); Mount Mbololo, 2, including 1 in alcohol (Heller); Mount Sagalla, 2, including 1 in alcohol (Heller); Wange, 1 in alcohol (Denhardt).

Measurements of specimens of Mus.

Form and locality.	No.	Sex.	Head and body	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylobasal length.	Zygomatic breadth.	Breadth of braincase.	Length of nasals.	Length of mandible.	Upper tooth row.	Condition of molar teeth.
M. t. triton.												
Uganda:												
Kisimbiri	165241	Male	81	52	15.8	.....	10.3	9.7	8.1	12.5	3.5	Moderately worn.
Do	165242	...do	73	45	15.9	19.8	10.1	9.5	7.5	12.2	3.6	Do.
Kikandwa	165243	...do	69	55	15.0	19.3	9.9	9.5	7.5	12.2	3.5	Do.
Do	165244	...do	71	52	15.4	19.4	10.3	9.7	7.5	12.3	3.8	Do.
B. E. A.:												
Kaimosi	183568	...do	72	.....	14.2	19.3	10.1	9.7	7.8	11.8	3.6	Considerably worn.
Do	183574	...do	78	53	14.8	20.7	10.5	9.9	8.2	12.4	3.8	Much worn.
Do	183580	...do	70	54	15.3	19.4	9.4	9.2	7.6	11.9	3.6	Moderately worn.
Do	183586	...do	75	57	15.1	19.8	10.0	9.7	7.4	12.1	3.7	Considerably worn.
Do	183587	...do	80	55	15.2	20.4	10.3	9.9	7.8	11.9	3.7	Do.
Do	183569	Female	83	55	16.0	20.4	10.3	9.8	8.3	12.9	3.8	Do.
Do	183575	...do	78	58	15.2	19.9	10.3	9.9	7.8	11.8	3.8	Much worn.
Do	183576	...do	80	56	14.9	20.4	10.1	9.3	8.7	12.6	3.7	Do.
Do	183581	...do	70	52	14.5	19.7	9.7	9.3	8.0	11.8	3.8	Moderately worn.
Do	183584	...do	70	51	15.3	18.9	10.2	10.0	7.2	12.2	3.8	Considerably worn.
Naivasha	162416	Male	80	51	14.8	19.8	10.0	9.6	7.8	11.6	3.8	Moderately worn.
Do	162433	...do	83	62	15.9	20 8	10.9	10.1	8.5	12.9	3.9	Do.
Do	162434	...do	81	58	15.3	19.9	9.7	9.5	7.8	12.3	3.7	Do.
Do	162437	...do	84	61	16.6	21.8	10.7	10.0	8.1	12.8	4.0	Do.
Do	162442	...do	72	55	15.8	19.1	9.6	9.4	7.7	11.8	3.9	Little worn.
Do	162426	Female	80	60	15.3	19.7	10.3	9.8	8.2	12.4	3.8	Do.
Do	162441	...do	80	59	16.0	20.3	10.2	9.5	8.1	12.8	3.9	Moderately worn.
Aberdares	[1] 162885	Male	76	54	15.0	19.5	10.5	9.8	7.4	11.8	3.9	Do.
Do	162561	...do	75	55	15.8	.....	9.6	9.7	7.3	12.2	3.8	Do.
Do	162562	...do	70	51	15.7	18.5	9.9	9.8	7.4	11.8	3.7	Little worn.
Do	162560	Female	75	53	15.8	20.1	10.1	9.8	7.8	12.2	3.9	Considerably worn.
Nyeri	163468	...do	82	60	15.2	20.5	10.7	10.3	8.4	12.7	3.7	Moderately worn.

Mount Kenia	163499	...do....	88	54	16.1	21.4	10.8	10.2	8.8	13.4	3.9	Do.
Burgunett River	183563	...do....	80	48	15.0	19.3	10.4	9.9	7.9	12.4	3.9	Much worn.
Isiola River	183564	Male....	78	55	14.9	20.3	10.3	9.8	8.3	12.6	3.7	Moderately worn.
M. t. murilla.												
Thika River	163453	...do....	81	40	14.0	.....	10.8	10.1	8.5	12.7	3.7	Do.
Kamiti Farm	163451	Female .	70	48	14.7	20.0	10.2	9.8	7.7	12.2	3.8	Little worn.
Kapiti Plains	161767	Male....	72	56	15.2	20.2	10.5	9.8	8.2	12.3	3.8	Moderately worn.
Do	161768	...do....	80	50	15.1	20.6	10.3	9.9	8.4	12.5	3.8	Do.
Do	161769	...do....	75	49	15.0	20.4	10.8	10.1	8.2	12.6	3.8	Do.
Do	161770	...do....	76	52	15.1	21.0	10.8	10.3	8.3	12.5	3.9	Do.
Do	161771	...do....	74	57	15.2	20.8	11.0	10.3	8.3	13.0	3.8	Do.
M. emesi.												
Uganda:												
Holma	165248	Female .	69	50	13.4	17.8	10.0	9.4	7.4	11.0	3.3	Little worn.
Kikandwa	165256	...do....	65	55	14.4	18.1	9.8	9.5	7.6	11.2	3.3	Do.
Kabula Muliro	[2] 164819	Male....	71	51	13.8	18.7	10.2	9.5	7.9	11.2	3.6	Moderately worn.
Kisimbiri	165250	...do....	65	48	14.4	17.8	10.0	9.6	7.4	11.0	3.3	Do.
Do	165251	...do....	65	55	13.8	17.4	9.6	8.8	7.3	10.8	3.5	Do.
Do	165253	...do....	.....	.....	13.8	17.7	9.4	8.9	7.3	10.6	3.3	Do.
Do	165254	...do....	66	55	13.6	18.1	9.5	9.4	7.3	10.3	3.6	Do.
Do	165252	Female .	58	49	13.8	17.4	9.4	9.0	7.3	10.9	3.3	Do.
M. b. enclavæ.												
Lado:												
Rhino Camp	[2] 164818	Male....	64	46	12.8	16.3	8.9	8.7	6.3	9.7	3.0	Do.
Do	165084	...do....	50	49	12.8	15.1	8.5	8.3	6.2	9.2	3.2	Little worn.
Do	165488	...do....	57	46	12.8	15.8	8.8	8.4	6.2	8.7	3.2	Do.
Do	165489	...do....	65	46	13.2	16.7	8.8	8.7	6.4	9.5	3.0	Moderately worn.
Do	165490	...do....	60	47	13.4	16.8	8.8	8.6	6.8	9.8	3.1	Do.
Do	165491	...do....	59	48	12.7	16.0	8.3	8.1	6.7	9.4	2.9	Do.
Do	165493	...do....	57	55	12.9	16.3	8.8	8.7	6.3	9.7	3.2	Do.
Do	165494	...do....	52	50	12.5	16.2	8.6	8.3	6.9	9.6	3.0	Do.
Do	165495	...do....	53	46	12.6	15.4	8.6	8.3	6.1	9.1	3.0	Do.
Do	165487	Female .	62	42	13.3	16.2	8.6	8.5	6.6	9.4	3.0	Do.

[1] Type of *Leggada naivashæ* Heller.

[2] Type.

Measurements of specimens of Mus—Continued.

Form and locality.	No.	Sex.	Head and body	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylobasal length.	Zygomatic breadth.	Breadth of braincase.	Length of nasals.	Length of mandible.	Upper tooth row.	Condition of molar teeth.
M. b. gondokoræ.												
Uganda: Gondokoro	[1] 164820	Male	60	43	12.3	16.1	9.0	8.5	6.3	9.2	3.0	Moderately worn.
M. b. bellus.												
B. E. A.												
Kapiti Plains	161776	do	54	45	12.3	16.8	9.1	8.5	7.1	10.3	3.3	Much worn.
Do	161778	Female	54	49	12.7	16.8	9.1	8.4	6.8	10.0	3.5	Moderately worn.
Ulukenia Hills	163514	do	63	45	12.3	16.7	9.4	8.6	7.3	10.3	3.0	Do.
Fort Hall	163459	do	65	47	12.0	17.1	9.0	8.6	6.7	10.1	3.2	Do.
Juja Farm	161780	Male	59	.....	.....	17.0	9.4	8.9	7.3	10.3	3.1	Do.
Do	161782	do	73	41	12.2	16.8	9.1	8.6	6.7	10.0	3.3	Do.
Do	161781	Female	70	42	.....	16.8	9.3	8.9	6.8	9.9	3.1	Do.
Mount Gargues	183550	Male	62	49	12.5	17.4	9.7	9.4	7.7	10.3	3.3	Considerably worn.
M. b. vicinus.												
Mount Mbololo	183555	do	55	42	11.5	.....	.....	.....	.....	9.8	3.1	Moderately worn.
Mount Sagalla	183556	Female	62	46	12.5	16.3	9.0	8.6	7.0	10.3	3.3	Do.
Mariakani	183557	Male	53	39	11.0	.....	.....	.....	.....	9.6	2.9	Do.
M. b. petilus.												
Naivasha	162403	do	59	44	12.8	16.0	8.7	8.0	6.8	9.8	3.0	Do.
So. Guaso Nyiro	[1] 162397	do	54	44	12.3	16.1	8.4	7.9	7.0	9.8	2.9	Much worn.
Do	162398	do	55	40	12.2	.....	.....	7.9	5.9	8.9	.....	Moderately worn.
M. g. gratus.												
Uganda: Kampala	165247	Male	67	53	12.7	16.8	9.1	8.3	7.2	9.9	2.8	Do.

B. E. A.:												
Kaimosi	183533	...do....	60	55	13.8	16.9	8.8	8.3	7.2	10.1	3.1	Do.
Do	183520	Female.	58	49	12.7	16.7	8.8	8.7	6.7	9.9	3.1	Considerabl yworn.
Do	183526	...do....	60	59	12.9	16.8	9.4	8.8	7.2	10.0	3.2	Moderately worn.
Do	183527	...do....	63	53	13.0	16.8	8.9	8.3	6.7	10.1	3.1	Do.
Do	183534	...do....	63	53	13.6	16.8	9.0	8.7	6.8	10.2	3.3	Do.
Kisumu	183517	...do....	65	53	14.0	18.3	9.6	9.3	7.6	11.2	3.5	Do.
Nyangnori	183540	Male....	65	59	13.6	17.8	9.3	9.0	7.5	10.8	3.3	Do.
Do	183541	...do....	65	55	13.4	17.2	8.9	8.6	7.2	9.7	3.1	Do.
Do	183538	Female.	75	50	13.8	19.3	10.3	9.5	7.8	11.5	3.5	Much worn.
Do	183539	...do....	70	53	13.9	18.8	10.0	9.5	8.3	11.0	3.4	Moderately worn.
Naivasha	162400	Male....	57	57	13.9	16.4	8.8	8.4	6.7	10.0	3.0	Do.
Do	162401	...do....	68	53	13.9	17.1	9.2	8.9	6.9	10.3	3.1	Do.
Do	162409	...do....	62	53	14.3	17.2	9.5	8.9	7.4	10.3	3.2	Do.
Do	162399	Female.	62	54	12.7	16.8	8.8	8.6	7.1	10.3	3.4	Do.
Do	162405	...do....	65	56	13.7	16.9	9.4	8.7	6.8	10.2	3.0	Do.
Nyeri	163477	Male....	63	55	13.3	16.2	8.8	8.6	6.3	9.5	3.1	Little worn.
Do	163485	Female.	67	57	14.0	17.2	9.3	8.9	6.8	10.2	3.0	Do.
Kenia	[2] 163487	Male....	70	60	14.6	18.2	9.5	9.0	7.1	10.5	3.3	Considerably worn.
Wambugu	163465	Female.	64	51	13.5	16.4	9.2	8.5	6.5	9.5	3.1	Moderately worn.
M. g. soricoides.												
Mount Mbololo	183543	Male....	63	55	14.0	.....	9.5	.....	6.8	9.8	3.2	Do.
Do	[1] 183544	...do....	60	59	14.5	17.5	9.2	8.8	7.1	10.2	3.3	Do.
Do	183545	...do....	60	.....	14.3	.....	9.1	.....	7.2	9.8	3.1	Do.
Mount Umengo	183546	Female.	60	56	13.4	16.8	9.2	8.8	6.7	9.8	3.0	Do.
M. t. acholi.												
Lado:												
Rhino Camp	[1] 164817	Male....	68	36	13.2	19.1	9.9	9.3	8.0	11.3	3.2	Much worn.
Do	165239	...do....	64	34	12.8	18.1	9.2	8.7	7.4	10.9	3.7	Little worn.
Do	165240	...do....	67	35	12.3	17.8	9.3	9.0	7.5	10.5	3.3	Do.
M. wamæ.												
B. E. A.: Kapiti Plains	[1] 161777	Female.	68	40	13.3	19.8	9.9	9.3	8.3	12.2	3.5	Much worn.

[1] Type.

[2] Type of *Mus gratus sungaræ* Heller.

The alcoholic specimen listed by True[1] from Doctor Abbott's Kilimanjaro collection as *? Mus minimus* Peters can not now be found. Doctor True reported it in a poor state of preservation in 1892.

MUS BELLUS PETILUS (Hollister).

Plate 25.

1916. *Mus bellus petilus* Hollister, Smithsonian Misc. Coll., vol. 66, No. 10, p. 3. October 26. (Southern Guaso Nyiro River, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Four, as follows:

British East Africa: Naivasha Station, 1 (Loring); Southern Guaso Nyiro River, 3 (Loring).

MUS GRATUS GRATUS (Thomas).

Plate 26.

1909. *L[eggada] grata* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 549. December. (Mubuku Valley, east Ruwenzori, Uganda; type in British Museum.)

1910. *Leggada grata* Thomas and Wroughton, Trans. Zool. Soc. London, vol. 19, p. 507. March.

1910. *Mus* (*Leggada*) *gratus* Roosevelt, African Game Trails, Amer. ed., pp. 473, 484 (Loring); London ed., pp. 485, 495 (Loring).

1910. (*Leggada*) *Mus gratus* Roosevelt, African Game Trails, Amer. ed., p. 477; London ed., p. 489.

1911. *Mus gratus sungaræ* Heller, Smithsonian Misc. Coll. vol. 56, No. 17, p. 7. February 28. (West Kenia Forest Station, 7,500 feet, British East Africa; type in U. S. Nat. Mus.)

Specimens.—One hundred and twelve, from localities as follows:

Uganda: Butiaba, 1 in alcohol (Loring); Kajuia, 1 (Loring); Kampala, 1 (Heller); Kisimbiri, 4, including 3 in alcohol (Loring).

British East Africa: Fort Hall, 1 in alcohol (Heller); Kaimosi, 34, including 16 in alcohol (Heller); Kakumega, 1 in alcohol (Heller); Kisumu, 4 (Heller); Londiana, 1 in alcohol (Heller); Lukosa River, 2 in alcohol (Heller); Meru, 2 in alcohol (Heller); Mount Kenia, west side, 14, including 4 in alcohol (Loring); Naivasha, 8 (Loring); Nyangnori, 4 (Heller); Nyeri, 20, including 11 in alcohol (Loring); Oljoro O Nyon River, 1 (Loring); Omboni River, 2 in alcohol (Mearns); Wambugu, 11, including 3 in alcohol (Loring, Mearns).

I can find no characters to warrant recognition of the form described from Mount Kenia by Heller as *Mus gratus sungaræ*.

A grass mouse, usually entirely away from bushes and trees. Usually taken in the runways of the larger species. Occasionally come into tents. Nocturnal. (Appendix B, p. 477.) Caught in traps set at random in the bushy thickets in the lowland, as well as in the open grassy spots on the rocky hillsides where they frequented the runways made by various species of *Mus*. A few were collected on Mount Kenia. (Appendix C, p. 484.)[2]

[1] Proc. U. S. Nat. Mus., vol. 15, p. 462. 1892.

[2] Roosevelt, Heller, and Loring, African Game Trails. 1910.

MUS GRATUS SORICOIDES Heller.

Plate 26.

1914. *Mus gratus soricoides* Heller, Smithsonian Misc. Coll., vol. 63, No. 7, p. 10. June 24. (Mount Mbololo, Taita Hills, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Four, as follows:

British East Africa: Mount Mbololo, 3 (Heller); Mount Umengo, 1 (Heller).

MUS TENELLUS ACHOLI Heller.

Plate 26.

1911. *Mus tenellus acholi* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 6. February 28. (Rhino Camp, Lado; type in U. S. Nat. Mus.)

Specimens.—Three, as follows:

Lado: Rhino Camp (Loring).

MUS WAMÆ Heller.

Plate 26.

1910. *Mus* (*Leggada*) *sorellus* Roosevelt, African Game Trails, Amer. ed., p. 473; London ed., p. 485. (Not *Leggada sorella* Thomas, 1909.)

1911. *Mus wamæ* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 5. February 28. (Kapiti Plains, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Two, as follows:

British East Africa: Kamiti Farm, Athi Plains, 1 in alcohol with skull removed (Loring); Kapiti Plains, 1 (Loring).

Two East African forms of mice belonging to the same group as do *acholi* and *wamæ* (a group characterized by the short tail; long snout; and peculiar, elongated palate) are not represented in our collections. These are *Mus sorella* (Thomas) [1] from near Mount Elgon, and *Mus tenellus suahelicus* (Thomas) [2] from Taveta.

MUS MUSCULUS GENTILIS Brants.

1827. *M*[*us*] *gentilis* Brants, Het Geslacht der Muizen, p. 126. (Egypt and Nubia.)

1905. *Mus musculus gentilis* Schwann, Novit. Zool., vol. 12, p. 4. January. (Specimen listed below from Kerma.)

Specimen.—One from—

Sudan: Kerma (Rothschild).

Genus CRICETOMYS Waterhouse.

1840. *Cricetomys* Waterhouse, Proc. Zool. Soc. London, 1840, p. 2. (*C. gambianus.*)

The giant rats listed below are all closely related forms, and it may well be doubted if some of the characters used in separating them hold good when better series of the animals are available for study. The Mount Gargues form, *Cricetomys gambianus raineyi*, is a well

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 548. 1909.

[2] Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 312. 1910.

marked subspecies; but *elgonis*, *kenyensis*, *enguvi*, and *osgoodi* are very much alike. They must all be recognized, however, on the basis of the present material.

For measurements of specimens of *Cricetomys* see opposite page.

CRICETOMYS GAMBIANUS RAINEYI Heller.

Plate 27.

1912. *Cricetomys gambianus raineyi* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 15. July 5. (Mount Gargues, Mathews Range, 6,000 feet. British East Africa; type in U. S. Nat. Mus.)

Specimens.—Four, from localities as follows:

British East Africa: Mount Gargues, 2 (Heller); Mount Lololokwi, 2 (Heller).

CRICETOMYS GAMBIANUS ELGONIS Thomas.

1910. *Cricetomys gambianus elgonis* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 198. February. (South face of Mount Elgon at 10,000 feet, British East Africa; type in British Museum.)

Specimens.—Three, from the following localities:

British East Africa: Kaimosi, 1 (Heller); Kakumega, 1 (Heller); Lukosa River, 1 (Heller).

There is much variation in the color of the belly in these three skins. One is buffy white below except for a small area on the chest; one is almost entirely grayish-drab below; and the third is about intermediate between the other two in the coloration of this part of the body. In all three the white part of the tail is much more extensive than the darker basal portion.

CRICETOMYS GAMBIANUS KENYENSIS Osgood.

1910. *Cricetomys gambianus kenyensis* Osgood, Field Mus. Zool., ser. vol. 10, No. 2, p. 9. February. (South side of Mount Kenia, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

Specimens.—Two, from the following localities:

British East Africa: Kikuyu, 1 (Klein); Nairobi, 1 (Klein).

The Nairobi skin has the underparts pure creamy white, sharply marked from the color of the sides; the Kikuyu skin has the underparts entirely drab colored, very slightly lighter than the color of the upperparts, and without noticeable line of demarcation.

CRICETOMYS GAMBIANUS ENGUVI Heller.

Plate 28.

1912. *Cricetomys gambianus enguvi* Heller, Smithsonian Misc. Coll., vol. 59, No. 16. p. 16. July 5. (Mount Umengo, Taita Mountains, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Fourteen, from the following localities:

British East Africa: Macharra, Taita Mountains, 1 (Heller); Mount Mbololo, 5 (Heller); Mount Sagalla, 1 (Heller); Mount Umengo, 6 (Heller).

Measurements of specimens of Cricetomys from British East Africa.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Skull: Condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Length of nasals.	Mandible.	Maxillary tooth row.	Condition of molar teeth.
C. g. raincyi.												
Mount Gargues	[1] 181804	Male	315	375	65	67.2	32.6	24.7	27.3	43.1	12.0	Moderately worn.
Do	183131	Female	280	325	60	.....	30.0	.....	23.5	38.8	11.9	Do.
Do	183133	...do	300	375	63	66.1	32.9	24.4	28.6	42.6	11.8	Do.
C. g. elgonis.												
Kakumega	183113	Male	.....	.....	.....	69.5	32.4	24.7	28.1	43.7	12.8	Do.
Kaimosi	183114	...do	340	380	68	.....	32.9	25.2	28.1	44.3	12.6	Do.
Lukosa River	183115	...do	295	360	65	63.3	31.5	24.0	26.6	40.3	12.4	Do.
C. g. kenyensis.												
Nairobi	183127	...do	.....	.....	.....	64.2	.....	25.8	.....	41.7	11.6	Do.
Kikuyu	183128	...do	381	412	.....	70.1	34.0	26.4	30.4	46.6	11.3	Do.
C. g. enguvi.												
Mount Umengo	182251	...do	370	390	70	74.5	35.5	25.3	31.8	48.7	11.9	Much worn.
Do	[1] 181805	Female	325	383	69	70.8	33.9	24.3	30.3	47.1	12.0	Do.
Do	182253	...do	320	360	67	69.5	35.4	24.6	29.4	45.7	12.4	Do.
Do	183123	...do	320	.....	67	69.9	34.2	23.7	30.0	45.5	12.0	Considerably worn.
Mount Mbololo	183116	...do	330	377	64	71.3	33.9	24.6	30.3	46.5	11.4	Do.
Do	183120	...do	300	330	68	66.1	31.5	24.3	27.5	41.7	11.4	Moderately worn.
Do	183121	...do	310	360	70	61.5	30.5	23.4	27.3	41.7	11.9	Do.
C. g. osgoodi.												
Mazeras	[1] 181806	Male	330	395	66	68.3	32.6	24.2	30.0	43.7	11.6	Do.
Do	182276	Female	340	395	66	73.0	34.6	25.1	32.0	47.7	12.5	Do.
Do	182277	...do	.....	.....	.....	75.1	35.0	25.5	32.9	48.7	11.8	Considerably worn.
Do	182278	...do	.....	.....	.....	69.2	32.7	24.3	30.0	45.2	12.0	Moderately worn.
Do	182282	...do	.....	.....	.....	71.3	31.9	25.3	30.5	46.9	11.5	Do.

[1] Type.

ZANZIBAR: "Zanzibar," 1 (purchased from Wilh. Schlüter).

The Zanzibar specimen is without record other than the locality "Zanzibar" written on the label. This may be regarded as doubtful; the specimen may well have come from some mainland locality. It is much more like skins of the Taita Mountains form than like those of *osgoodi* from Mazeras, but has a much larger proportion of the tail whitish than in any specimen of either of these races in our collection.

In Heller's journal of the Rainey Expedition he notes that the giant rats were abundant in the Taita Hills; he often saw their holes and runways in the forests which clothe the summits. He found them gentle in the traps and they did not offer to bite when stroked. The natives use them extensively for food.

CRICETOMYS GAMBIANUS OSGOODI Heller.

Plate 29.

1912. *Cricetomys gambianus osgoodi* HELLER, Smithsonian Misc. Coll., vol. 59. No. 16, p. 16. July 5. (Mazeras, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Nine, as follows:

BRITISH EAST AFRICA: Mazeras (Heller).

The type-specimen of this subspecies is not, as stated in the original description, an aged individual. The skull is by no means fully grown and the molar teeth are only moderately worn.

Genus LOPHUROMYS Peters.

1866. *Lasiomys* PETERS, Mon.-ber. K. Preuss. Akad. Wiss., Berlin, 1866, p. 409. (*L. afer*. Not of Burmeister, 1854.)

1874. *Lophuromys* PETERS, Mon.-ber. K. Preuss. Akad. Wiss., Berlin, 1874, p. 234. (*L. afer.*)

The "harsh-furred" mice, as the members of this genus have been called, are among the most beautiful of all the African rodents. Their warm, rich coloration and general appearance suggest strongly certain members of the Neotropical genus *Oxymycteris*, and curiously enough the superficial appearance of skulls of the two genera presents many features in common. The number of forms, their exact relationship, and distribution, are still doubtful and the genus presents many problems for a careful monographer.

For tables of measurements of specimens see pages 107–109.

LOPHUROMYS AQUILUS AQUILUS (True).

Plate 30.

1892. *Mus aquilus* TRUE, Proc. U. S. Nat. Mus., vol. 15, p. 460. October 26. (Mount Kilimanjaro, German East Africa; type in U. S. Nat. Mus.)

1909. *Mus aquilus* LYON AND OSGOOD, Bull. 62, U. S. Nat. Mus., p. 144. January 28.

1909. *Lophuromys zena* DOLLMAN, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 550. December. (East side of Aberdare Mts., near Nyeri, British East Africa; type in British Museum.)

Measurements of specimens of Lophuromys.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylo-basal length.	Zygomatic breadth.	Interorbital breadth.	Mastoid breadth.	Mandible.	Upper tooth row, alveoli.	Condition of molar teeth.
L. a. aquilus.												
G. E. A.: Mount Kilimanjaro	[1] 18997	Male	.....	.....	21.4	.....	14.6	6.2	.....	17.4	4.8	Moderately worn.
B. E. A.:												
Engare Narok	162547	...do	142	82	21.2	29.8	14.8	6.1	12.9	18.3	4.9	Do.
Lake Naivasha	162551	...do	134	71	21.7	30.9	15.5	6.1	12.9	18.9	5.3	Much worn.
Do	162553	...do	133	74	20.8	31.2	15.2	6.0	13.3	18.8	5.0	Do.
Do	162556	...do	137	74	21.8	30.8	15.4	5.9	13.1	19.1	5.4	Moderately worn.
Do	162560	...do	126	.....	20.5	29.5	14.4	5.9	13.2	18.2	5.5	Do.
Do	162571	...do	147	73	21.7	29.2	14.4	5.7	13.0	18.7	5.2	Do.
Do	162554	Female	122	67	20.6	29.3	14.6	5.9	13.0	18.3	5.5	Do.
Do	162555	...do	135	.....	21.0	29.8	15.3	6.3	13.2	18.7	5.8	Much worn.
Do	162557	...do	133	75	21.1	30.7	15.3	6.3	13.3	19.2	5.4	Do.
Do	162568	...do	137	69	20.3	29.6	14.3	6.3	13.0	18.4	5.5	Moderately worn.
Nyeri	163538	Male	132	71	21.5	28.8	14.3	6.1	12.3	17.7	5.0	Do.
Wambugu	163535	...do	119	69	22.3	30.6	14.9	6.7	13.6	18.8	5.3	Do.
Do	163591	Female	135	71	21.6	29.6	14.4	6.0	12.5	18.3	5.3	Do.
Aberdare Mountains	183882	Male	123	.....	20.5	29.4	15.8	6.0	12.7	17.5	5.0	Considerably worn.
Do	183884	...do	125	87	21.3	28.7	14.4	6.0	12.5	17.4	5.3	Moderately worn.
Do	183889	...do	132	74	21.8	29.4	15.3	6.0	12.8	17.3	5.1	Do.
Do	183890	...do	120	68	21.5	.....	14.1	5.9	12.7	17.2	5.3	Do.
Do	183894	...do	135	80	21.1	29.3	14.6	6.0	12.8	17.4	5.0	Do.
Do	183895	...do	125	77	22.0	29.2	14.7	6.1	12.7	16.8	5.1	Do.
Do	183886	Female	120	74	21.2	30.0	15.2	6.0	12.9	18.3	5.2	Do.
Do	183887	...do	140	72	20.6	30.7	15.3	5.8	13.1	18.7	5.2	Do.
Do	183888	...do	140	.....	20.8	30.3	15.0	5.9	13.2	18.2	5.2	Do.

[1] Type.

Measurements of specimens of Lophuromys—Continued.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylo-basal length.	Zygomatic breadth.	Interorbital breadth.	Mastoid breadth.	Mandible.	Upper tooth row, alveoli.	Condition of molar teeth.
Mount Kenia	163544	Male	142	.....	22.3	29.4	15.6	6.4	13.6	18.8	5.0	Much worn.
Do	163555	...do	129	69	22.2	29.2	13.4	6.0	12.6	18.6	5.2	Do.
Do	163568	...do	126	.....	21.7	28.6	13.8	6.1	13.2	18.2	5.1	Moderately worn.
Do	163570	...do	124	.....	22.0	29.0	13.8	5.9	12.8	16.8	5.2	Do.
Do	163574	...do	132	.....	21.8	28.9	14.3	6.0	.....	18.3	4.8	Much worn.
Do	163575	...do	122	70	21.7	29.9	14.1	5.9	12.9	17.1	5.3	Moderately worn.
Do	163576	...do	124	55	21.0	28.6	14.4	6.0	12.7	18.1	4.8	Do.
Do	163515	Female	133	65	21.0	28.3	14.9	5.9	12.6	17.5	5.0	Do.
Do	163527	...do	130	.....	21.1	30.0	14.6	6.2	13.5	18.8	5.5	Much worn.
Do	163559	...do	116	57	20.7	28.2	14.0	5.8	12.8	17.5	4.8	Moderately worn.
Do	163560	...do	122	62	21.1	28.6	13.9	6.0	13.0	17.9	4.9	Do.
Nzoia River	163518	Male	135	79	20.7	30.4	15.4	6.3	13.3	18.7	4.9	Much worn.
Lukosa River	183877	...do	135	78	21.9	31.1	14.8	6.7	13.0	18.9	5.6	Do.
Kisumu	183865	...do	125	73	21.5	29.1	14.6	6.0	12.6	17.8	5.1	Moderately worn.
Do	183866	...do	125	64	20.2	28.9	14.9	6.2	12.6	17.0	5.0	Do.
Kaimosi	183867	...do	125	74	21.3	29.1	14.5	5.8	12.6	17.2	5.2	Do.
Do	183868	Female	135	80	20.0	30.5	14.9	6.2	12.8	18.9	5.1	Considerably worn.
Do	183870	...do	132	73	21.0	29.8	15.1	6.3	12.9	18.2	4.8	Do.
Do	183871	...do	123	68	20.7	30.4	15.5	6.2	13.2	18.2	5.5	Do.
Do	183873	...do	135	81	21.7	30.2	14.8	6.1	12.6	18.3	5.0	Moderately worn.
Do	183875	...do	115	73	20.8	28.8	14.5	6.0	12.4	17.4	5.2	Do.
Uganda:												
Kampala	165225	Female	130	66	19.5	.....	14.2	5.9	12.6	16.8	4.8	Do.
Nkyanuna	165222	Male	122	76	20.8	28.9	14.8	6.0	12.8	17.3	5.0	Do.
Kisingo	165223	...do	124	50	20.0	27.7	14.1	5.9	12.6	17.2	5.0	Do.
Kikanda	165224	Female	124	73	20.5	28.9	14.1	6.0	12.3	17.4	4.8	Do.

L. a. margarettæ.												
B. E. A.:												
Mount Gargues	[1] 181793	Male	120	80	21.0	29.1	14.5	5.9	12.5	17.3	5.0	Considerably worn.
Do	183844	...do	120	68	19.7	27.4	14.1	5.7	12.2	16.3	5.1	Moderately worn.
Do	183849	...do	115	74	20.6	28.7	15.0	5.9	12.1	17.0	4.9	Considerably worn.
Do	183856	...do	120	77	21.8	29.0	14.8	6.2	12.4	17.8	5.0	Moderately worn.
Do	183860	...do	118	75	21.5	28.3	14.4	6.0	12.2	17.4	5.0	Do.
Do	183861	...do	120	70	21.0	28.8	14.4	5.9	12.3	16.9	5.0	Do.
Do	183847	Female	120	75	20.7	28.3	14.0	6.0	12.0	16.5	4.9	Do.
Do	183850	...do	110	67	20.0	27.9	13.9	5.8	11.8	16.7	5.0	Do.
Do	183851	...do	120	75	20.5	28.4	14.2	5.9	12.1	17.1	4.9	Do.
L. a. ansorgei.												
B. E. A.:												
Kisumu	183896	Male	130	70	20.2	29.9	14.7	6.6	12.4	18.2	5.5	Do.
Do	183902	...do	130	66	22.3	29.9	15.3	6.2	13.7	18.3	5.2	Do.
Do	183898	Female	125	81	22.2	30.3	15.3	6.4	13.3	18.3	5.0	Do.
Do	183899	...do	130	.....	22.5	31.7	15.7	6.3	13.3	19.0	5.4	Do.
Do	183900	...do	132	.....	20.2	31.4	15.8	6.3	13.1	18.9	5.5	Considerably worn.
Do	183901	...do	125	71	22.1	30.3	15.4	6.1	12.8	18.6	5.4	Moderately worn.
Do	183906	...do	125	71	22.1	30.2	15.1	6.4	12.6	18.8	5.3	Do.
Kaimosi	183910	...do	120	65	20.9	29.8	14.4	5.7	12.5	18.7	5.2	Little worn.
Nzoia River	163519	Male	150	74	22.6	31.5	15.4	6.7	13.4	19.7	5.4	Moderately worn.
Do	163517	Female	160	.....	23.9	33.0	16.8	7.1	13.8	21.2	5.9	Much worn.
Uganda:												
Kabula Muhro	165213	Male	154	73	22.3	32.3	16.2	7.0	13.6	20.6	5.8	Moderately worn.
Hoima	165215	...do	138	.....	22.9	31.1	15.9	6.9	13.4	19.8	5.4	Do.
Mnyouri Jardin	165211	...do	141	78	22.8	32.4	15.8	6.6	13.2	19.8	5.4	Do.
L. a. pyrrhus.												
Lado:												
Rhino Camp	[1] 164823	...do	136	72	21.9	30.9	14.8	6.7	12.7	18.8	5.2	Do.
Do	165209	...do	137	70	21.8	.....	.....	6.7	.....	19.2	5.3	Do.
Do	165210	...do	138	65	23.8	30.5	15.2	6.5	13.0	18.7	5.5	Do.
Do	165207	Female	118	64	21.8	28.2	14.3	6.3	12.2	17.7	5.4	Little worn.
Do	165208	...do	129	67	22.7	30.3	15.1	6.5	13.2	18.8	5.2	Moderately worn.

[1] Type.

1909. *Lophuromys rubecula* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 551. December. (Elgonyi, Mt. Elgon, British East Africa; type in British Museum.)

1910. *Lophuromys aquilus* Roosevelt, African Game Trails. Amer. ed., pp. 472, 477; London ed., pp. 484, 489.

1914. *Lophuromys* sp. Cockerell, Miller, and Printz, Zool. Anz., vol. 44, p. 437. June 23.

Specimens.—Two hundred and fifty-three, from the following localities:

Uganda: Kampala, 6, including 4 in alcohol (Loring); Kikanda, 1 (Loring); Kisingo, 1 (Loring); Nkyanuna, 1 (Loring).

British East Africa: Aberdare Mountains, 23, including 5 in alcohol (Heller); Engare Narok River, 5 (Loring, Heller); Fort Hall, 1 (Loring); Guas Ngishu Plateau, north of Ravine Station, 3 in alcohol (Heller); Kaimosi, 29, including 18 in alcohol (Heller); Kakumega, 1 in alcohol (Heller); Kisumu, 3 (Heller); Lukosa River, 2 (Heller); Mount Kenia, west side, 100, including 26 in alcohol (Loring, Heller, Mearns); Naivasha 52, including 3 in alcohol (Loring, Mearns); Nyeri, 7, including 3 in alcohol (Loring); Nzoia River, 4, including 3 in alcohol (Heller); Oljoro O Nyon River, 2 (Heller); Ravine, 1 in alcohol (Heller); Sirgoit Lake, 3 in alcohol (Heller); Southern Guaso Nyiro River, 2 in alcohol (Mearns); Wambugu, 5, including 1 in alcohol (Loring, Mearns).

German East Africa: Mount Kilimanjaro, 1 (Abbott)

There appear to be no constant characters by which this form may be further divided into geographical races. A suitable series of specimens from the type locality of *aquilus* is still lacking, and until this is obtained it will be impossible to determine with certainty the status of Dollman's *Lophuromys zena*. Every feature of the type-specimen of *aquilus* can be matched in some specimen from British East Africa, however, and these latter do not vary geographically among themselves to any appreciable extent. Allowing for slight variations in tail and body measurements by different collectors and the usual differences of pelage due to wear and fading the species seems remarkably constant in both external and cranial characters from Kilimanjaro to Albert Nyanza. There is some difference in the size of the teeth in various specimens, but aside from what appears to be a slight reduction with altitude it amounts to little. I can not see the slightest difference between specimens from the type locality of *zena* and those from the Guas Ngishu Plateau, Kavirondo and Uganda, which should represent Dollman's *Lophuromys rubecula*. At first sight the Kaimosi and Lukosa River skins appear darker than usual, but as a matter of fact fresh, clean skins from Kenia and Naivasha match them almost precisely. The color of the hind foot varies greatly in the relative amount of dark and light area, but dark feet and light mottled feet are not confined to any one region. The same may be said of the intensity of color of the belly.

Breeding records noted on specimen labels are as follows: Nyeri, September 16, two large embryos; Aberdare Mountains, October 9, one and two large embryos.

Common in Rift Valley, on the top of the Aberdares, and in the Kenia forest. Go up to timber line, but are not found in the deep forest, save about the edges of the streams. Very fond of brush. Do not go out on the grassy plains. Usually, but not strictly, nocturnal; and in the cold, foggy uplands, as on the Aberdares, become diurnal.[1]

LOPHUROMYS AQUILUS MARGARETTÆ Heller.

Plate 30.

1912. *Lophuromys aquilus margarettæ* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 7. July 5. (Mount Gargues, Mathews Range, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Twenty-seven, including 6 in alcohol, as follows:

British East Africa: Mount Gargues (Heller).

This well marked form is chiefly conspicuous for its dark coloration and the absence of speckling on the lower back and rump. The skulls average smaller then in true *aquilus* and the tail is relatively longer.

See measurements, page 109.

LOPHUROMYS ANSORGEI ANSORGEI de Winton.

1896. *Lophuromys ansorgei* de Winton, Proc. Zool. Soc. London, 1896, p. 607. (Mumia's, Kavirondo, British East Africa; type in British Museum.)

1910. *Lophuromys ansorgei* Roosevelt, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

Specimens.—Thirty, from localities as follows:

Uganda: Butiaba, 3, including 2 in alcohol (Loring); Hoima, 3, including 2 in alcohol (Loring); Kabula Muliro, 1 (Loring); Kikonda, 1 in alcohol (Loring); Kisingo, 1 odd skull (Loring); Lialo, 1 (Loring); Mnyouri Jardin, 1 (Loring).

British East Africa: Kaimosi, 1 (Heller); Kibabe, Kisumu, 3 in alcohol (Heller); Kisumu, 13 (Heller); Nzoia River, Guas Ngishu Plateau, 2 (Heller).

There is considerable difference in color between the series from Kisumu and Kaimosi, and those from other localities. Just what this means it is impossible to decide without more material. The Kisumu skins are very much like the colored plate of the type specimen of *ansorgei*, while those from a point on the Nzoia River equally near the type locality are considerably lighter in color, with reddish sides and a deeper colored belly. All of the Uganda skins are much like the Nzoia River specimens in color, and differ from the figure of the type and from the Kisumu skins by their lighter colored flanks. There appear to be some slight skull differences between the Kisumu specimens and the Uganda and Nzoia River material; but there are hardly

[1] Roosevelt and Heller, Afr. Game Trails, Appendix B, Amer. ed., p. 477. 1910.

enough specimens to be sure that these are really constant. I am almost sure that two well-marked subspecies are here represented—the Uganda and Guas Ngishu form, and the dark Kavirondo Gulf race. The type of *ansorgei* is doubtless somewhat intermediate but nearest the Kavirondo form.

LOPHUROMYS ANSORGEI PYRRHUS Heller.

Plate 30.

1911. *Lophuromys pyrrhus* Heller, Smithsonian Misc. Coll., vol. 56. No. 17, p. 10. February 28. (Rhino Camp, Lado Enclave; type in U. S. Nat. Mus.)

Specimens.—Nine, including 3 in alcohol and 1 odd skull, as follows:

Lado: Rhino Camp (Loring).

This form is closely related to true *ansorgei* but averages brighter and richer colored, with much more intensely colored underparts. The skulls appear to average smaller, but there is not a really old specimen in the series, so the limits of its growth are unknown. This race seems to be restricted to the western side of the Nile.

Genus URANOMYS Dollman.

1909. *Uranomys* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 551. December. (*U. ruddi.*)

The single specimen of this genus collected by the Smithsonian African expedition has been made the type of a new species.

URANOMYS UGANDÆ Heller.

Plate 31.

1911. *Uranomys ugandæ* Heller, Smithsonian Misc. Coll., vol. 56. No. 17. p. 12. February 28. (Kikonda, Uganda; type in U. S. Nat. Mus.)

Specimen.—One, the type.

Uganda: Kikonda (Loring).

Genus BEAMYS Thomas.

1909. *Beamys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 107. August. (*B. hindei.*)

This rare pouched rat is known only from the coast region of British East Africa, inland to Kilimanjaro; and from Nyasaland.

BEAMYS HINDEI Thomas.

1909. *Beamys hindei* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 108. August. (Taveta, British East Africa; type in British Museum.)

Specimens.—Thirteen, including one in alcohol, as follows:

British East Africa: Mazeras (Heller).

Heller found the cheek pouches of some of these specimens well filled with seeds.

For measurements of specimens see opposite page.

Measurements of specimens of Beamys hindei from Mazeras, B. E. A.

No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Ear.	Skull: Condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Interorbital breadth.	Mandible.	Upper tooth row, alveoli.	Condition of molar teeth.
183101	Male	130	117	22.0	21	31.8	15.5	12.2	5.2	20.1	5.1	Moderately worn.
183104	do	125	114	21.0	20	32.1	15.0	12.4	4.9	21.0	5.0	Do.
183105	do	140	135	21.5	24	35.2	17.6	12.9	4.9	22.6	5.3	Do.
183106	do	126	118	21.5	22	31.2	15.6	12.4	5.2	19.7	5.2	Do.
183107	do	125	125	21.0	21	31.9	15.5	12.1	4.8	20.4	5.0	Do.
183109	do	140	128	23.0	22	34.2	17.2	13.3	5.1	20.5	5.2	Do.
183112	do	140	140	22.0	21	35.8	17.6	13.4	4.8	22.8	5.0	Do.
183102	Female	130	.....	21.0	21	34.0	16.1	12.7	5.2	22.0	4.8	Much worn.
183103	do	125	124	20.5	22	32.1	15.9	12.4	4.9	20.0	5.3	Moderately worn.
183108	do	130	126	22.0	21	33.6	16.3	13.2	5.2	20.8	5.3	Do.
183110	do	140	129	21.0	21	35.0	16.8	12.8	5.0	22.0	5.3	Do.
183111	do	120	120	21.0	20	31.7	15.1	12.1	5.2	20.3	5.1	Do.

Genus SACCOSTOMUS Peters.

1846. *Saccostomus* PETERS, Ber. Königlich Akad. Berlin, 1846, p. 258. (*S. campestris.*)

1903. *Eosaccomys* PALMER, Science, new. ser., vol. 17, p. 873. (*S. campestris.*)

The three species of pouched rats of the genus *Saccostomus* known from British East Africa are closely related to South African forms, and doubtless will prove to be geographical races of some earlier named species when the group is carefully monographed.

For measurements of specimens of *Saccostomus* see page 115.

SACCOSTOMUS MEARNSI Heller.

Plate 32.

1910. *Saccostomus mearnsi* HELLER, Smithsonian Misc. Coll., vol. 54 [No. 1924], p. 3. February 28. (Changamwe, British East Africa; type in U. S. Nat. Mus.)

1910. *Saccostomus mearnsi* ROOSEVELT, African Game Trails, Amer. ed., p. 473; London ed., p. 485.

Specimens.—Two, as follows:

BRITISH EAST AFRICA: Changamwe (Mearns).

Doctor Mearns records the "iris very dark brown, almost black; toes flesh color."

SACCOSTOMUS UMBRIVENTER Miller.

Plate 32.

1910. *Saccostomus umbriventer* MILLER, Smithsonian Misc. Coll., vol. 54 [No. 1925], p. 1. February 28. (Njoro Osolali, Sotik, British East Africa; type in U. S. Nat. Mus.)

1910. *Saccostomus umbriventer* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 479; London ed., pp. 485, 490.

Specimens.—Eight, from localities as follows:

BRITISH EAST AFRICA: Kabalolot Hill, Sotik, 1 (Heller); Njoro Osolali, 3 (Loring); Southern Guaso Nyiro River, 1 (Heller); Telek River, Sotik, 3 (Heller).

SACCOSTOMUS ISIOLÆ Heller.

Plate 31.

1912. *Saccostomus isiolæ* HELLER, Smithsonian Misc. Coll., vol. 59, No. 16, p. 14. July 5. (Isiola River, Northern Guaso Nyiro, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Twenty-nine, from localities as follows:

BRITISH EAST AFRICA: Isiola River, 20 (Heller); Lower Nyuki, Northern Guaso Nyiro, 1 (Heller); Mayo River, Laikipia Plateau, 1 (Heller); Turah Water, Northern Guaso Nyiro, 7 (Heller).

One female contained four embryos, another six, on July 1.

Measurements of specimens of Saccostomus.

Form and locality.	No.	Sex.	Head and body	Tail vertibræ.	Hind foot, dry, without claws.	Skull: Condylobasal length.	Zygomatic breadth.	Mastoid breadth.	Length of nasals.	Mandible.	Upper tooth row, alveoli.	Condition of molar teeth.
S. mearnsi.												
B. E. A.:												
Changamwe	[1] 162882	Male	156	65	22.1	32.2	16.4	13.2	13.9	20.4	6.8	Moderately worn.
Do	164854	Female	137	73	22.0							
S. umbriventer.												
B. E. A.:												
Southern Guaso Nyiro	162610	Male	188	53	20.5	32.2	15.9	13.5	15.4	20.6	6.3	Considerably worn.
Njoro Osolali	162611	Female	133	60	20.8	32.9	17.0	14.2	16.3	21.3	6.0	Do.
Do	[1] 162612	...do	136	55	20.5		17.3	13.8	16.8	21.9	6.6	Much worn.
Kabalolot Hill	181732	...do	130	56	19.0	32.0	16.0	13.0	15.6	21.0	6.0	Considerably worn.
Telek River	181733	...do	140	54	20.1	32.9	16.9	14.0	15.8	21.7	6.8	Do.
S. isiolæ.												
B. E. A.:												
Isiola River	183689	Male	130	69	21.5	32.8	17.8	14.1	15.6	21.8	6.4	Moderately worn.
Do	183690	...do	132	78	22.3	34.4	17.9	14.3	15.6	21.8	6.8	Considerably worn.
Do	[1] 181803	Female	128	72	21.2	33.1	17.1	14.1	14.1	20.4	6.7	Moderately worn.
Do	183678	...do	130	67	21.2	32.7	17.0	13.7	14.8	21.2	6.8	Do.
Do	183679	...do	135	70	21.3	32.6	18.2	13.9	13.9	20.6	6.6	Do.
Do	183684	...do	135	66	20.4	31.6	17.0	13.8	14.0	20.7	6.3	Do.
Do	183688	...do	125	68	19.8	31.3	17.3	13.6	13.4	20.3	6.6	Do.
Mayo River	183705	...do	133	70	21.0	32.8	17.6	14.0	15.1	21.3	6.5	Do

[1] Type.

Genus ACOMYS Geoffroy.

1838. *Acomys* I. Geoffroy, Ann. Sci. Nat., Paris, ser. 2, vol. 10, p. 126. (*A. cahirinus.*)

The spiny mice of this genus appear to be very local in distribution and large parts of East Africa are unrepresented by specimens. In some favorable localities, as in the Northern Guaso Nyiro district, three, if not four, distinct species are found in one vicinity and the animals are abundant.

For detailed measurements of specimens see pages 119–121.

ACOMYS WITHERBYI de Winton.

1901. *Acomys witherbyi* de Winton, Novit. Zool., vol. 8, p. 400. December 31. (El Kowa, Sudan; type in British Museum.)

1905. *Acomys witherbyi* Schwann, Novit. Zool., vol. 12, p. 4. January.

Specimen.—One, as follows:

Sudan: Naikhala (Rothschild).

Dr. Glover M. Allen[1] has suggested the probable identity of this species with *Acomys cineraceus* Heuglin and Fitzinger, described from Doka, eastern Sennar, between the Atbara and the Rahad Rivers.

ACOMYS HYSTRELLA Heller.

Plate 31.

1911. *Acomys hystrella* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 13. February 28. (Nimule, Uganda; type in U. S. Nat. Mus.)

Specimens.—Thirty-seven, from localities as follows:

Uganda: Ledgus, 5 in alcohol (Loring); Nimule, 32, including 9 in alcohol and 16 odd skulls (Loring).

ACOMYS IGNITUS IGNITUS Dollman.

1910. *Acomys ignitus* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 229. August. (Voi, British East Africa; type in British Museum.)

Specimens.—Thirty-two, from the following localities:

British East Africa: Changamwe, 5, including 4 in alcohol (Mearns); Maji-ya-chumvi, 2 (Heller); Mariakani, 4, including 2 in alcohol (Heller); Mazeras, 9, including 4 in alcohol (Heller); Mtoto Andei, 6, including 3 in alcohol (Heller); Voi, 6 (Heller).

Doctor Mearns notes of an adult male from Changamwe: "Iris very dark brown." At Voi on October 28, Heller found females with one and two large embryos: at Mariakani, January 1, with one embryo; and at Mtoto Andei, April 6, one very large embryo which is preserved in alcohol.

ACOMYS IGNITUS KEMPI Dollman.

1911. *Acomys kempi* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 125 July. (Chanler Falls, Northern Guaso Nyiro, British East Africa; type in British Museum.)

1914. *Acomys i[gnitus] kempi* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 14, p. 487. December.

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[1] Bull. Mus Comp. Zool. Harvard, vol. 58, p. 329. July, 1914.

Specimens.—Fifty-two, from the following localities:

British East Africa: Archer's Post, 4, including 1 in alcohol and 2 odd skulls (Heller); Chanler Falls, 1 (Percival); Isiola River, 1 in alcohol (Heller); Kara River, Marsabit Road, 1 (Heller); Lakiundu River, 21, including 10 in alcohol and 3 odd skulls (Heller); Longaya Water, Marsabit Road, 2 (Heller); Marsabit Road, 1 in alcohol (Heller); Merele Water, Marsabit Road, 1 (Heller); Mount Gargues, 9, including 2 in alcohol (Heller); Northern Guaso Nyiro River, 6, including 2 in alcohol (Heller, Percival); Quoy, Marsabit Road, 1 (Heller); Salt River, 3 (Percival); Sandai, 1 (Percival).

Included in the above series are several specimens which have been identified by Dollman as belonging to his *Acomys pulchellus*,[1] described from the same type locality as *Acomys ignitus kempi*. The specimens are unquestionably the rather immature examples of *kempi*, and it seems probable that such a specimen was made the type of *pulchellus*. There is an extraordinary difference in size of skulls in this species between young adults and old adults. Skulls which have the teeth worn so that all pattern is obliterated still have the basal suture open, and the skull apparently grows throughout the life of the animal. It would seem strange that out of all the specimens of this group of *Acomys* from the Northern Guaso Nyiro in our collection all the oldest should be *kempi* and all the youngest specimens *pulchellus*. The series contains specimens showing all ages from those in which the last molar is not in place to very old individuals with the teeth almost worn away; and I am well satisfied that all belong to one species. The oldest specimens have heavier and longer spines than young or subadult animals. Mr. Heller examined the type-specimens of *kempi* and *pulchellus* in London and noted that the teeth were almost unworn in the type skull of *pulchellus*, while the type of *kempi* was old with much more worn teeth.

Two females from Marsabit Road, July 20 and 21, contained embryos; in one a single fetus, in the other, two fetuses.

ACOMYS IGNITUS MONTANUS Heller.

1914. *Acomys ignitus montanus* Heller, Smithsonian Misc. Coll., vol. 63, No. 7, p. 12. June 24. (North slope of Mount Marsabit, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Two, as follows:

British East Africa: Mount Marsabit (Percival).

The type was trapped at an altitude of 4,600 feet on the north slope; the paratype is from the south slope of the mountain. These

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 127. July, 1911.

specimens are without skulls, but the skins indicate a large, dark colored form related to *kempi*.

ACOMYS PERCIVALI Dollman.

1911. *Acomys percivali* DOLLMAN, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 126. July. (Chanler Falls, Northern Guaso Nyiro, British East Africa; type in British Museum.)

Specimens.—Ninety-one, from the following localities:

BRITISH EAST AFRICA: Longaya Water, Marsabit Road, 2 in alcohol (Heller); Merele River, Marsabit Road, 38, including 13 in alcohol and 5 odd skulls (Heller); Mount Gargues, 23, including 11 in alcohol (Heller); Mount Lololokwi, 22, including 9 in alcohol (Heller); Northern Guaso Nyiro River, 6 (Heller).

Specimens were trapped on the summit of Mount Lololowki, at 6,000 feet. Breeding records are as follows: Northern Guaso Nyiro, October 4, two large embryos; Mount Gargues, September 3, two embryos; and a single embryo each from two females on Marsabit Road, July 28 and 30.

ACOMYS WILSONI WILSONI Thomas.

1892. *Acomys wilsoni* THOMAS, Ann. and Mag. Nat. Hist., ser. 6, vol. 10, p. 22. July. (Mombasa, British East Africa; type in British Museum.)

1910. *Acomys wilsoni* ROOSEVELT, African Game Trails, Amer. ed., p. 473. London ed., p. 485.

Specimens.—Eighteen, from localities as follows:

BRITISH EAST AFRICA: Changamwe, 1 in alcohol (Mearns); Mariakani, 1 in alcohol (Heller); Mazeras, 1 (Heller); Mount Sagalla, 2 (Heller); Mtoto Andei, 13, including 6 in alcohol (Heller).

ACOMYS WILSONI ABLUTUS Dollman.

1911. *Acomys ablutus* DOLLMAN, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 127. July. (Nyama Nyango,[1] Northern Guaso Nyiro, British East Africa; type in British Mus.)

1914. *Acomys w[ilsoni] ablutus* DOLLMAN, Ann and Mag. Nat. Hist., ser. 8, vol. 14, p. 487. December.

Specimens.—Fourteen, from localities as follows:

BRITISH EAST AFRICA: Archer's Post, 4, including 3 in alcohol (Heller); Isioli River, 6, including 2 in alcohol and 1 odd skull (Heller); Northern Guaso Nyiro River, 4 in alcohol (Heller).

Heller found four embryos in a female collected at Archer's Post, July 5; and one embryo in a female captured near the Isiola River, July 1. Four embryos seem to be an unusually large number for mice of this genus.

[1] According to Lönnberg, Kungl. Sv. Vet. Akad. Handl., vol. 48, No. 5, p. 96, 1912, this is another name for Neuman's camp, or "Neuman's Boma" of some maps, situated on the Northern Guaso Nyiro River near the mouth of the Isiola.

Measurements of East African specimens of Acomys.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Interorbital breadth.	Mandible.	Upper tooth row, alveoli.	Condition of molar teeth.
A. hystrilla.												
Uganda:												
Nimule	165217	Male	106	82	15.6	25.4	13.5	11.1	4.6	15.8	4.5	Considerably worn.
Do	165218	do	106	95	15.9	25.3	12.8	10.8	4.4	15.0	4.6	Moderately worn.
Do	165221	do	104	92	15.5	25.3	12.8	11.0	4.6	15.1	4.5	Do.
Do	[1] 161821	Female	111	81	15.9	26.2	13.4	11.0	4.7	15.4	4.7	Much worn.
Do	165216	do	109	78	15.9	25.6	13.4	11.0	4.4	16.0	4.8	Do.
Do	165219	do	98	97	15.8	24.0	12.4	10.9	4.5	15.2	4.5	Moderately worn.
Do	165220	do	106	97	15.7	23.8	12.6	10.8	4.5	14.4	4.4	Little worn.
A. l. ignitus.												
B. E. A.:												
Mtoto Andei	181750	do	110	.....	15.5	27.3	14.8	12.0	4.9	16.4	4.1	Much worn.
Voi	182885	Male	115	82	15.7	27.0	13.8	11.6	4.8	15.9	4.2	Do.
Do	182886	do	105	87	15.6	26.2	13.9	11.6	4.5	15.4	4.2	Considerably worn.
Do	182887	do	100	84	15.4	25.4	13.5	11.3	4.6	14.8	4.2	Do.
Do	182888	do	80	72	15.5	22.9	12.4	10.8	4.4	13.9	4.2	Little worn.
Do	182889	Female	110	88	15.7	27.0	14.3	11.5	4.8	15.8	4.3	Considerably worn.
Do	182890	do	110	90	15.4	26.8	13.8	11.6	4.8	15.6	4.3	Do.
Maji-ya-chumvi	182892	Male	106	76	15.9	27.3	13.6	11.5	4.7	16.0	4.4	Moderately worn.
Mazeras	182895	Female	110	81	15.4	26.3	13.8	11.7	4.7	15.1	4.4	Do.
Do	182896	do	112	74	16.1	27.3	13.9	12.2	5.0	16.4	4.8	Do.

[1] Type.

Measurements of East African specimens of Acomys—Continued.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry, without claws.	Skull: Condylo-basal length.	Zygomatic breadth.	Mastoid breadth.	Interorbital breadth.	Mandible.	Upper tooth row, alveoli.	Condition of molar teeth.
A. i. kempi.												
B. E. A.:												
Northern Guaso Nyiro	183932	Male	100	94	15.8	25.7	13.6	11.4	4.6	15.2	4.3	Much worn.
Do	182931	Female	95	84	14.8	24.3	13.2	10.8	4.5	14.4	4.3	Considerably worn.
Lakiundu River	182910	Male	103	93	15.5	25.7	13.1	12.3	4.6	15.0	4.2	Do.
Do	182915	...do	100	88	14.8	24.8	13.0	11.0	4.8	14.2	4.4	Moderately worn.
Do	182916	...do	102	95	16.0	26.3	13.4	11.4	4.6	15.2	4.6	Considerably worn.
Do	182909	Female	110	94	15.6	26.3	13.8	11.5	4.6	15.7	4.3	Do.
Mount Gargues	182928	Male	95	82	15.8	25.8	13.4	11.2	4.9	15.3	4.4	Do.
Do	182929	...do	100	90	15.5	27.1	14.3	11.7	4.7	16.2	4.4	Much worn.
Marsabit Road	182918	...do	100	94	15.2	23.8	12.8	10.9	4.4	14.7	4.1	Little worn.
Do	182917	Female	100	100	15.0	24.5	12.4	10.6	4.5	14.0	4.2	Moderately worn.
A. i. montanus.												
B. E. A.:												
Mount Marsabit	182900	Male	91	97	16.0							
Do	[1] 182901	Female	90	92	15.6							
A. percivali.												
B. E. A.:												
Northern Guaso Nyiro	182979	Male	95	95	13.8	24.4	12.8	10.3	4.7	14.6	4.2	Much worn.
Mount Gargues	182955	...do	95	72	13.8	24.3	13.0	10.5	4.7	14.3	4.4	Moderately worn.
Do	182961	...do	92	82	14.1	24.4	13 3	10.9	4.9	14.6	4.8	Do.
Do	182964	...do	90	73	14.8	24.4	12.5	10.4	4.5	13.8	4.5	Do.
Do	182960	Female	97	91	15.0	25.3	13.3	11.2	4.8	15.3	4.2	Do.
Mount Lololokwi	182965	Male	100	83	14.5	25.2	13.5	10.7	4.9	15.8	4.5	Do.
Do	182970	...do	102	88	14.0	25.4	13.2	10.9	4.6	15.2	4.4	Considerably worn.
Do	182976	...do	87		13.5	26.5	14.0	10.9	4.9	16.0	4.6	Do.

Do	182973	Female	95	88	13.7	24.8	13.2	10.7	4.9	14.6	4.2	Do.
Marsabit Road	182944	Male	90	.....	13.2	24.3	12.3	10.3	4.5	14.1	4.1	Much worn.
Do	182935	Female	97	84	13.3	24.7	12.9	10.6	4.6	14.6	4.3	Do.
Do	182945	...do	98	.....	13.0	24.1	13.0	10.5	4.3	14.4	4.1	Do.
A. w. wilsoni.												
B. E. A.:												
Mtoto Andei	181748	Male	90	57	13.4	22.6	11.9	9.8	4.4	13.7	3.9	Moderately worn.
Do	181749	...do	90	55	12.8	22.4	12.0	9.9	4.5	13.5	4.0	Do.
Do	181745	Female	92	55	12.5	23.9	12.5	9.8	4.6	13.6	4.2	Considerably worn.
Do	181746	...do	85	46	12.3	22.1	11.7	9.9	4.4	13.3	3.9	Little worn.
Do	181761	...do	90	45	12.3	22.8	12.0	9.8	4.5	13.7	3.9	Considerably worn.
Mariakani	182986	Male	85	.....	12.8	23.5	12.2	9.8	4.4	13.9	3.7	Moderately worn.
Mount Sagalla	182984	...do	90	50	12.6	23.2	12.3	10.1	4.4	13.8	4.0	Do.
Do	182983	Female	90	53	12.3	23.6	12.3	9.6	4.3	13.9	3.9	Do.
Mazeras	182985	Male	85	51	13.3	24.1	11.8	9.9	4.3	14.3	3.9	Do.
A. w. ablutus.												
B. E. A.:												
Isiola River	182987	...do	83	40	12.0	21.4	11.4	10.1	4.3	13.2	3.7	Do.
Do	182988	Female	82	43	12.0	21.2	11.4	9.3	4.4	12.6	3.9	Do.
Do	182989	...do	80	43	11.8	21.5	11.5	9.5	4.2	12.8	3.9	Do.
Archer's Post	182990	...do	95	46	11.5	22.4	11.3	9.7	4.1	12.8	3.8	Much worn.

[1] Type.

Genus DASYMYS Peters.

1875. *Dasymys* Peters, Mon.-ber. K. Preuss. Akad. Berlin, 1875, p. 12. (*D. gucinzii.*)

The swamp rats of the genus *Dasymys* are animals which do not seem to be common in collections. At least our collectors failed to take them in such satisfactory series as usual with many other murines. When collections are made throughout eastern and central Africa and it becomes possible to monograph the group in a satisfactory manner, most of the forms listed below will doubtless prove to be geographic races of *Dasymys incomtus* Sundevall.

For measurements of specimens see page 124.

DASYMYS HELUKUS HELUKUS Heller.

Plate 33.

1910. *Dasymys helukus* Heller, Smithsonian Misc. Coll., vol. 54, [No. 1924], p. 2. February 28. (Sirgoit, Guas Ngishu Plateau, British East Africa; type in U. S. Nat. Mus.)

1910. *Dasymus helukus* Roosevelt, African Game Trails, Amer. ed., pp. 473, 478; London ed., pp. 485, 490. (Part.)

Specimens.—Fifty-five, from localities as follows:

British East Africa: Kaimosi, 50, including 9 in alcohol (Heller); Kibabe, Kisumu, 1 (Heller); Nzoia River, 1 (Heller); Sirgoit, 3, including 1 in alcohol (Heller).

The skins in this series are remarkably uniform in color. Heller notes three sucking young with a female collected at Kaimosi, January 29.

DASYMYS HELUKUS SAVANNUS Heller.

Plate 34.

1911. *Dasymys savannus* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 14. February 28. (Fort Hall, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Fifteen, from the following localities:

British East Africa: Archer's Post, 1 (Heller); Fort Hall, 1 (Loring); Isiola River, 1 (Heller); Kapiti Plains, 1 (Loring); Lakiundu River, 3 (Heller); Mount Kenia, west slope, 8, including 6 in alcohol (Heller, Loring).

The material representing this pale reddish form is far from satisfactory. I suspect that more specimens will show the advisibility of separating a new subspecies from north of Mount Kenia. No specimen in the series matches the type in color or skull characters, but some of the skins from the Lakiundu River are the extremes of reddish coloration. The males in this small series are all of a grayish brown, much as in males and females of true *helukus*, while the females are all of the reddish type. The material is hardly extensive enough to prove that this is a regular sexual coloration. In other forms the sexes are indistinguishable in color.

DASYMYS HELUKUS NIGRIDIUS Hollister.

Plate 34.

1916. *Dasymys helukus nigridius* Hollister, Smithsonian Misc. Coll., vol. 66, No. 10, p. 2. October 26. (Lake Naivasha, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Twenty-six, as follows:

British East Africa: Aberdare Range, 1 (Heller); Lake Naivasha, 25, including 6 in alcohol and 3 odd skulls (Loring, Mearns).

This large, dark form is conspicuously different in coloration from its much paler geographical neighbors, *D. h. helukus* and *D. h. savannus*. The single specimen from the Aberdares, while slightly smaller than Naivasha skins, is fully as dark and is quite unlike the more reddish or brownish-gray specimens of *savannus* from the western slopes of Mount Kenia. It was collected at an altitude of 7,000 feet.

The skull of *Dasymys helukus nigridius* averages somewhat larger than skulls of either *Dasymys h. helukus* or *D. h. savannus*, with higher sinciput, heavier rostrum, and greater interorbital breadth. The teeth are also larger. Skins of young animals, about one-half grown, are especially dark as compared with the young of *D. h. savannus* of corresponding age. The subspecies is further conspicuous for its very long and silky fur.

Loring found three large embryos in a female collected at Naivasha Station, August 20.

DASYMYS ORTHOS Heller.

Plate 34.

1911. *Dasymys orthos* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 13. February 28. (Butiaba, Albert Nyanza, Uganda; type in U. S. Nat. Mus.)

1914. *Dasymys* sp. Frick, Ann. Carnegie Mus., vol. 9, p. 8, pl. 1. June 6.

Specimens.—Three, from localities as follows:

Lado: Rhino Camp, 1 (Loring).

Uganda: Butiaba, 2 (Loring).

DASYMYS BENTLEYÆ MEDIUS Thomas.

1906. *Dasymys medius* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 18, p. 143. August. (Mubuku Valley, East Ruwenzori, Uganda; type in British Museum.)

1910. *Dasymys medius* Thomas and Wroughton, Trans. Zool. Soc. London, vol. 19, p. 514. March.

Specimen.—One, as follows:

Uganda: Mubuku Valley, East Ruwenzori (Dent).

Measurements of Specimens of Dasymys.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot from dry skin.	Skull: Condylobasal length.	Zygomatic breadth.	Length of nasals.	Interorbital breadth.	Upper tooth row (alveoli).	Lower tooth row (alveoli).	Condition of molars.
D. h. helukus.												
B. E. A.:												
Sirgoit	[1] 162889	Male	185	143	32	37.7	19.7	14.3	4.4	7.4	7.3	Moderately worn.
Do	164465	do	160	131	30	34.7	18.5	13.1	4.4	7.6	7.5	Do.
Nzoia River	164464	do	180	151	32	36.8	19.3	14.1	4.6	7.4	7.3	Do.
Kaimosi	183152	do	165	155	30	36.4	18.7	13.4	4.1	7.4	7.3	Do.
Do	183159	do	150	136	29	35.5	18.2	13.5	4.2	7.4	7.4	Do.
Do	183165	do	150	152	31	36.2	18.8	13.1	4.7	7.6	7.5	Do.
Do	183173	do	171	144	30	36.7	19.0	14.6	4.4	7.5	7.4	Considerably worn.
Do	183155	Female	145	150	30	35.6	19.1	14.3	4.5	7.2	7.0	Do.
Do	183158	do	160	155	30	36.0	18.5	13.6	4.4	7.7	7.4	Do.
Do	183171	do	145	154	28	36.1	18.9	13.6	4.5	7.4	7.4	Moderately worn.
D. h. savannus.												
B. E. A.:												
Fort Hall	[1] 164471	Female	156	146	30	37.5	18.5	14.6	4.4	7.5	7.3	Considerably worn.
Mt. Kenia	164463	Male	163	140	30	.....	19.2	14.8	4.2	7.6	7.5	Do.
Archer's Post	183181	do	162	145	31	37.9	18.9	14.6	4.5	7.5	7.3	Do.
Lakiundu River	183180	Female	150	152	30	35.4	18.5	13.2	4.5	7.4	7.2	Moderately worn.
Do	183179	do	158	156	30	.....	.....	14.8	4.4	7.1	7.1	Considerably worn.
D. h. nigridius.												
B. E. A.:												
Naivasha	162449	Male	165	150	32	.....	.....	13.7	5.1	7.6	7.1	Moderately worn.
Do	162454	do	.....	.....	.....	36.7	18.7	12.9	4.8	7.9	7.5	Do.
Do	162455	do	.....	.....	.....	38.2	19.2	13.9	4.4	8.1	7.8	Do.
Do	162448	Female	164	164	33	38.4	20.0	14.5	5.0	8.2	7.6	Considerably worn.
Do	162452	do	172	140	31	37.1	19.6	13.9	4.6	7.3	7.3	Do.
Do	162463	do	.....	.....	.....	37.9	20.4	14.6	4.8	7.9	8.0	Do.
Do	[1] 162465	do	176	162	33	38.4	20.1	13.8	4.7	8.0	7.6	Moderately worn.

D. arthos.											
Uganda:											
Butiaba	[1] 164824	Male	160	156	32	36.3	18.3	14.0	4.4	7.3	Do.
Do	165237	Female	138	145	31	35.2	18.2	13.4	4.3	7.3	Do.
Lado: Rhino Camp	165238	...do	137	138	29	.....	17.1	12.6	4.4	7.0	Do.
D. b. medius.											
Uganda: Ruwenzori	172920	Male	144	137	29	36.9	18.7	14.2	4.5	7.4	7.7 Considerably worn.

[1] Type.

Genus PELOMYS Peters.

1852. *Pelomys* PETERS, Mon.-ber. K. Preuss. Akad. Berlin, p. 275. (*P. fallax.*)

The creek rat seems to be uncommon in most parts of British East Africa. No member of the restricted genus *Pelomys* was collected by the Smithsonian African Expedition, but while on the Rainey Expedition Mr. Heller found the following species abundant in the Taita Mountains.

PELOMYS FALLAX IRIDESCENS Heller.

Plate 35.

1912. *Pelomys fallax iridescens* HELLER, Smithsonian Misc. Coll., vol. 59, No. 16, p. 12. July 5. (Mount Mbololo, Taita Mountains, British East Africa, altitude 5,000 feet; type in U. S. Nat. Mus.)

Specimens.—Fifty-five, from localities as follows:

BRITISH EAST AFRICA: Mount Mbololo, 37, including 10 in alcohol (Heller); Mount Sagalla, 13, including 4 in alcohol (Heller); Mount Umengo, 2 (Heller); Voi, 3 (Heller).

There is great variation in color among skins of this form from a single locality. In some the iridescent greenish tint is very conspicuous over the entire upperparts. The opposite extreme from this condition is with almost no green in the make-up of the coloration above and with the subterminal rings of the longer hairs Sudan-brown rather than yellowish-buff, giving the animal a very different general appearance. There is a continouus growth of skull throughout life, and specimens with the teeth so much worn that all trace of the cusps is lacking still have the basi-sphenoid suture open.

For measurements of specimens see page 126.

Genus MYLOMYS Thomas.

1906. *Mylomys* THOMAS, Ann. and Mag. Nat. Hist., ser. 7, vol. 18, p. 224. September. (*M. cuninghamei.*)

This poorly characterized genus perhaps should not be recognized as distinct from *Pelomys*, with which it is closely related.

Measurements of specimens of Pelomys and Mylomys.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.	Ear.	Skull: Condylo-basal length.	Zygomatic breadth.	Mandible.	Upper tooth row.	Lower tooth row.	Condition of molar teeth.
Pelomys f. iridescens.												
Mount Mbololo	[1] 181801	Male	140	140	32	18	33.3	18.2	21.7	7.0	6.9	Moderately worn.
Do	183648	do	140	145	32	18	32.3	17.3	20.9	7.1	6.8	Do.
Do	183653	do	140	154	32	18	33.3	18.1	20.5	7.0	6.9	Considerably worn.
Do	183658	do	150	150	32	18	34.0	18.3	21.3	7.1	6.7	Do.
Do	183663	do	160	.....	32	20	35.7	18.5	21.6	7.2	6.7	Much worn.
Do	183641	Female	130	135	31	17	31.7	17.1	19.7	6.8	6.6	Moderately worn.
Do	183647	do	145	145	32	18	33.8	17.7	21.5	7.2	6.9	Much worn.
Do	183649	do	145	150	31	18	33.6	17.8	21.3	6.8	6.8	Do.
Do	183651	do	130	133	30	17	31.3	16.8	19.9	6.8	6.6	Moderately worn.
Do	183652	do	135	139	31	18	32.7	17.8	21.2	7.0	7.0	Considerably worn.
Do	183659	do	140	143	32	17	33.2	18.2	21.2	6.7	6.8	Do.
Do	183660	do	140	150	33	17	32.4	17.3	20.7	7.1	6.7	Moderately worn.
Do	183662	do	145	143	32	18	32.4	17.3	21.2	7.1	6.8	Considerably worn.
Mount Sagalla	183667	Male	150	164	33	18	33.9	18.0	21.3	7.2	7.0	Moderately worn.
Do	183671	do	135	156	32	19	33.2	17.6	20.8	6.9	6.7	Do.
Do	183674	do	155	165	32	19	35.1	18.6	22.3	7.4	7.0	Considerably worn.
Do	183668	Female	145	153	31	18	32.3	17.4	20.7	7.0	6.8	Moderately worn.
Do	183670	do	145	159	33	18	33.4	17.8	21.0	7.1	6.8	Do.
Do	183672	do	130	143	33	17	31.5	16.8	20.1	7.1	7.0	Little worn.
Do	183673	do	155	158	32	18	35.3	18.9	22.9	7.3	7.0	Much worn.
Mount Umengo	183665	Male	150	154	32	19	34.4	17.9	21.8	6.8	6.9	Moderately worn.
Do	183664	Female	140	146	32	18	33.4	17.5	20.9	7.3	6.9	Do.
Voi	183675	Male	145	158	33	20	35.1	18.4	21.3	7.2	6.8	Do.
Do	183677	do	160	158	33	20	36.4	18.7	22.8	7.0	7.0	Considerably worn.
Do	183676	Female	150	152	32	19	33.7	18.0	21.2	6.9	6.8	Moderately worn.

Mylomys roosevelti.												
Nzoia River	[1] 162881	Male	170	153	33	19	34.1	18.2	21.2	8.3	7.8	Do.
Kaimosi	183598	do	158	175	34	19	33.3	17.3	20.0	7.9	7.8	Do.
Do	183603	do	155	161	32	18	33.3	17.0	21.3	8.1	8.0	Do.
Do	183607	do	162	168	33	.....	34.9	17.4	22.1	7.8	7.8	Do.
Do	183600	Female	131	147	32	19	30.3	15.6	19.1	7.8	7.8	Little worn.
Do	183602	do	165	165	32	20	34.8	18.2	22.3	8.1	7.8	Much worn.
Do	183604	do	145	157	32	18	32.9	16.6	20.3	8.0	8.0	Moderately worn.
Do	183608	do	145	155	32	19	32.7	16.5	20.6	7.9	7.8	Do.
Kakumega	183613	Male	152	163	33	20	32.3	17.5	20.4	8.0	7.8	Do.
Do	182612	Female	155	.....	30	19	32.7	17.3	21.7	7.5	7.2	Considerably worn.

[1] Type.

MYLOMYS ROOSEVELTI (Heller).

Plate 33.

1910. *Pelomys roosevelti* HELLER, Smithsonian Misc. Coll., vol. 54 [No. 1924], p. 1. February 28. (Nzoia River, Guas Ngishu Plateau, British East Africa; type in U. S. Nat. Mus.)

1910. *Pelomys roosevelti* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 479; London ed., pp. 485, 490.

Specimens.—Eighteen, from the following localities:

BRITISH EAST AFRICA: Kaimosi, 15 (Heller); Kakumega, 2 (Heller); Nzoia River, Guas Ngishu Plateau, 1 (Heller).

Specimens from Kaimosi have slightly longer tails and darker colored feet than the type from Nzoia River, but the difference is not great and there is only the one specimen from the type locality. In the Kaimosi series are several very young specimens. The youngest, in which the last molars have not yet erupted, are colored above very much like the fully adult but are dark cinnamon buff below, the hairs with ground color dark gray, very different from the clear whitish belly of the adult. Older juveniles, after all the teeth are in place but quite unworn, are much duller above and are becoming more as in the older specimens below—the throat, breast, and posterior underparts are decidedly whitish. Slightly older specimens, with the teeth showing a little wear, are very much faded out, of a dull bleached brown above, but with the entire underparts in fresh coat like that of the adults.

For measurements of specimens see accompanying table.

Genus ARVICANTHIS Lesson.

1842. *Arvicanthis* LESSON, Nouv. Tabl. Mamm., p. 147. (*A. niloticus.*)

1843. *Isomys* SUNDEVALL, K. Svenska Akad. Handl., 1842, p. 219. (*A. niloticus.*)

The unstriped grass rats of the restricted [1] genus *Arvicanthis* are well represented in the collections from nearly all the districts of East Africa covered by our expeditions. The animals seem to be abundant everywhere and good series of specimens of most of the known forms were taken.

For measurements of specimens of *Arvicanthis* see pages 132–135.

ARVICANTHIS TESTICULARIS TESTICULARIS (Sundevall).

1843. *Isomys testicularis* SUNDEVALL, K. Svenska Akad. Handl., 1842, p. 221. (Bahr el Abiad, Sudan.)

1905. *Arvicanthis testicularis* SCHWANN, Nov. Zool., vol. 12, p. 4.

Specimens.—Thirteen, from the following localities:

SUDAN: Kerma, 1 (Rothschild); Khartoum, 10, including 3 in alcohol (Heller, Loring); Merowe, 1 (Rothschild); Shereik 1 (Rothschild).

ARVICANTHIS TESTICULARIS JEBELÆ Heller.

Plate 35.

1911. *Arvicanthis jebelæ* HELLER, Smithsonian Misc. Coll., vol. 56, No. 17, p. 9. February 28. (Rhino Camp, Lado Enclave; type in U. S. Nat. Mus.)

1911. *Arvicanthis testicularis jebelæ* DOLLMAN, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 338. September.

Specimens.—Thirty-three, from localities as follows.:

LADO: Rhino Camp, 32, including 8 in alcohol (Loring, Mearns).

UGANDA: Gondokoro, 1 (Loring).

The single specimen from Gondokoro is indistinguishable from the lighter colored skins in the series collected west of the Nile. At both Rhino Camp and Gondokoro distinct forms of the dark-bellied *Arvicanthis abyssinicus* group are also found. These latter are sharply separated by the Nile and it would therefore not be surprising if a better series from Gondokoro made it possible also to distinguish a form of *testicularis*, separate from the Lado subspecies, on the east side of the river.

ARVICANTHIS ABYSSINICUS CENTROSUS Hollister.

Plate 35.

1911. [*Arvicanthis*] *rubescens* HELLER, Smithsonian Misc. Coll., vol. 56, No. 17, p. 10. February 28. (Part, specimens from Rhino Camp, Lado; not of Wroughton.)

1916. *Arvicanthis abyssinicus centrosus* HOLLISTER, Smithsonian Misc. Coll., vol. 66, No. 10, p. 1. October 26. (Rhino Camp, Lado; type in U. S. Nat. Mus.)

Specimens.—Sixteen, including two in alcohol, from:

LADO: Rhino Camp (Loring, Mearns).

This subspecies of *Arvicanthis abyssinicus* is readily distinguished from *Arvicanthis testicularis jebelæ* Heller, which occupies the same region in the Lado Enclave, by its much darker color, above and below,

[1] See Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 18, pp. 67–70. July, 1916.

and by its shorter tail. In its blackish coloration it much resembles certain specimens of *A. abyssinicus nubilans* of the Kisumu Province, British East Africa, but its distribution is separated from the range of that form by the Uganda *A. a. rubescens*, which occupies the eastern side of the Nile system from Ankole to southern Sudan (Mongalla [1]).

ARVICANTHIS ABYSSINICUS RUBESCENS Wroughton.

909. *Arvicanthis abyssinicus rubescens* Wroughton, Ann. and Mag. Nat. Hist. ser. 8, vol. 4, p. 538. December. (Kibero, Unyoro, Uganda; type in British Museum.)

1910. *Arvicanthis abyssinicus rubescens* Roosevelt, African Game Trails, Amer. ed., p. 473; London, ed., p. 485.

1911. [*Arvicanthis*] *rubescens* Heller, Smithsonian Misc. Coll., vol. 56, No. 17, p. 10. February 28. (Part; specimens from Gondokoro, Uganda.)

Specimens.—Seventeen, from localities as follows:

Uganda: Butiaba, 1 (Loring); Gondokoro, 9, including 1 in alcohol (Loring); Hoima, 1 (Loring); Kampala, 3 (Loring); Kisingo, 2 including 1 in alcohol (Loring); Nimule, 1 in alcohol (Heller).

There is considerable variation in color among the specimens representing this form, but on the average they are lighter and more reddish than any specimens of the neighboring subspecies in Lado and about Kavirondo Gulf. The Nile appears to be an effective barrier between this form and the much darker subspecies of Lado.

ARVICANTHIS ABYSSINICUS NUBILANS Wroughton.

1909. *Arvicanthis abyssinicus nubilans* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 4. December. (Kisumu, British East Africa; type in British Museum.)

Specimens.—Forty-five, from the following localities:

British East Africa: Kaimosi, 23, including 5 in alcohol (Heller, Turner); Kakumega, 2 (Heller); Kisumu, 18, including 3 in alcohol (Heller, Turner); Nzoia River, 1 (Heller); Sirgoit Lake, 1 in alcohol (Heller).

This is a very slightly characterized form, averaging a little darker than *A. a. rubescens*. The amount of variation between specimens from Kisumu and Kaimosi is, however, almost as great as between the race as a whole and *rubescens*, and I much doubt if a conscientious reviser, working with suitable series of specimens, will recognize more than one form in the Nyanza region. I have been able to find only one character on which to justify the separation of the two subspecies, the slightly larger molar teeth of *nubilans*. This difference is pronounced when comparison is made between *rubescens* and specimens of *nubilans* from Kisumu, but much less so if specimens of the latter from Kaimosi are used.

Heller found five embryos in a female collected at Kaimosi January 23.

[1] Recorded by Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 461. October, 1911.

ARVICANTHIS ABYSSINICUS NAIROBÆ Allen.

1909. *Arvicanthis nairobæ* Allen, Bull. Amer. Mus. Nat. Hist., vol. 26, p. 168, March 19. (Nairobi, British East Africa; type in Amer. Mus. Nat. Hist., New York.)

1909. *Arvicanthis abyssinicus nairobæ* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 537. December.

1910. *Arvicanthis abyssinicus nairobæ* Roosevelt, African Game Trails, Amer. ed., pp. 473 and 478; London ed., pp. 485 and 490.

Specimens.—Eighty-seven, from the following localities:

British East Africa: Engare Narok River, 7 (Loring); Fort Hall, 14, including 2 in alcohol (Loring, Mearns); Juja Farm, 44, including 3 in alcohol and 8 odd skulls (Loring, Mearns); Lake Naivasha, south end, 4 (Loring, Mearns); Nairobi, 1 (Mearns); Nyeri, 1 (Loring); Ulukenia Hills, 16, including 6 in alcohol (Loring).

Specimens collected near the south end of Lake Naivasha are practically indistinguishable from the Nairobi and Juja Farm skins. The range of *nairobæ* extends also west to the Engare Narok River, thus separating in this region the subspecies *præceps* and *pallescens*, on the north and south. Lönnberg[1] has recorded, on Dollman's identification of a specimen, *Arvicanthis abyssinicus præceps* from Fort Hall. Specimens in our excellent series from Fort Hall are in every way similar to *nairobæ* rather than to *præceps*, and the record of *præceps* from Fort Hall, based on a single specimen, is doubtless erroneous.

Loring found two females at Juja Farm, May 16, with six fetuses each. Mearns records from the same locality one female with six large fetuses, May 23, and one with three fetuses, May 24.

Roosevelt and Heller say of this species:[2]

The commonest mouse in B. E. A. on the plains. Outnumbers any other species. Found everywhere in grass and brush, but not in deep forest. Often lives in shallow burrows round the bases of thorn-trees, from which its well-marked runways radiate into the grass. Strictly diurnal. Often seen running about in bright sunlight. Never found in traps at night.

ARVICANTHIS ABYSSINICUS PRÆCEPS Wroughton.

1909. *Arvicanthis abyssinicus præceps* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 4, p. 538. December. (Naivasha, British East Africa; type in British Museum.)

Specimens.—Seven, from the following localities:

British East Africa: Mayo River, Laikipia, 3 (Heller); Naivasha Station, 4, including 1 in alcohol and 1 odd skull (Loring, Mearns).

ARVICANTHIS ABYSSINICUS PALLESCENS Dollman.

1914. *Arvicanthis rumruti pallescens* Dollman, Abstract Proc. Zool. Soc. London, No. 131, p. 25. April 14. (Loita Plains, British East Africa; type in British Museum.)

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[1] Kungl. Svenska Vet. Akad. Handl., vol. 48, No. 5, p. 99. 1912.

[2] African Game Trails, Appendix B, p. 478. 1910.

Specimens.—Forty-seven, from localities as follows:

British East Africa: Loita Plains, 1 (Heller); Njoro Osolali, 1 (Loring); Sotik, 4 in alcohol (Heller); Southern Guaso Nyiro River, 41, including 21 in alcohol (Loring, Heller, Mearns).

Loring found one female with three fetuses, and two with five fetuses each, on the Southern Guaso Nyiro, June 15.

ARVICANTHIS ABYSSINICUS VIRESCENS Heller.

Plate 36.

1914. *Arvicanthis abyssinicus virescens* Heller, Smithsonian Misc. Coll., vol. 63, No. 7, p. 11. June 24. (Voi, British East Africa; type in U. S. Nat. Mus.)

Specimen.—One, the type:

British East Africa: Voi (Heller).

Dollman, in his synopsis of the forms of this group,[1] included specimens from Voi with *Arvicanthis abyssinicus neumanni* Matschie, described from Burunge, Irangi, south of Mount Kilimanjaro. Heller examined the type of *neumanni* in the Berlin Museum, before describing *virescens*, and made the following manuscript notes on it:

Type A 5593, ♂ young. Burungi, G. E. A., coll. O. Neumann; alcoholic; skull removed, but not cleaned. Head and body, 93; tail, 90; hind foot, 24; ear, 15. Immature, teeth not worn. Color buffy, without much annulation of darker color; underparts whitish; feet and tail buffy like sides. Skull: condyloincisive length, 26.5; basilar length, 22.5; zygomatic breadth, 15.0; nasals, 9.5 x 3.5; interorbital width, 4.8; upper tooth row, 5.4; diastema, 7.1.

ARVICANTHIS ABYSSINICUS CHANLERI Dollman.

1911. *Arvicanthis chanleri* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 130. July. (Chanler Falls, Northern Guaso Nyiro, British East Africa; type in British Museum).

Specimens.—Thirty-one, from the following localities:

British East Africa: Engare Ndare River, Northern Guaso Nyiro, 1 (Heller); Mount Lololokwi, 29, including 1 in alcohol (Heller); North Loroghi Mountains, 1 (Percival).

This subspecies was trapped on Mount Lololokwi in the upper forest, near the summit, at 6000 feet altitude. It is clearly a subspecies of *abyssinicus*, and is rather closely related to *A. a. nairobæ*. Heller found a specimen of this animal in the stomach of a secretary-bird on Mount Lololokwi.

ARVICANTHIS SOMALICUS REPTANS Dollman.

1911. *Arvicanthis reptans* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 8, p. 129. July. (Nyama Nyango, Northern Guaso Nyiro, British East Africa; type in British Mus.)

1912. *Arvicanthis somalicus reptans* Lönnberg, Kungl. Svenska. Vet. Akad. Handl., vol. 48, No. 5, p. 99.

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 8, pp. 348-349. September, 1911.

Measurements of specimens of Arvicanthis.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Length of nasals.	Length of mandible.	Upper tooth row (alveoli).	Lower tooth row (alveoli).	Condition of molars.
A. t. testicularis.												
Sudan:												
Kerma	141506	Female	143	.....	33.1	17.8	5.2	12.6	20.2	6.9	6.7	Moderately worn.
Khartoum	165114	Male	154	121	32.1	16.1	4.9	12.6	19.7	6.7	6.0	Do.
Do	165115	do	162	145	33.6	16.9	5.3	13.1	21.3	6.5	6.4	Do.
Do	165116	do	150	140	32.8	16.9	5.0	13.3	20.4	6.8	6.5	Do.
Do	165117	Female	160	148	32.8	17.0	5.8	12.5	20.3	6.9	6.4	Much worn.
Do	165118	do	143	138	30.7	16.5	5.2	11.7	18.8	6.7	6.4	Moderately worn.
A. t. jebelæ.												
Lado:												
Rhino Camp	[1] 164826	Male	140	150	31.2	16.7	4.9	12.4	19.7	6.8	6.6	Do.
Do	164851	do	132	132	30.3	15.8	5.0	11.3	19.6	6.9	6.8	Do.
Do	165120	do	153	152	32.3	16.3	5.4	13.8	20.7	6.4	6.4	Do.
Do	165139	do	135	136	33.1	17.6	5.5	14.1	20.6	6.4	6.3	Much worn.
Do	165123	Female	145	131	30.8	17.1	5.1	12.3	19.9	6.3	6.3	Considerably worn.
Do	165127	do	152	142	31.3	16.9	5.1	11.6	20.7	6.7	6.7	Moderately worn.
Do	165128	do	147	136	31.4	17.0	4.8	12.8	20.6	6.4	6.3	Do.
Do	165136	do	122	133	29.8	16.5	4.6	11.5	19.5	6.4	6.3	Do.
Do	165137	do	137	130	30.3	16.3	4.9	12.4	19.6	6.2	6.3	Little worn.
Do	165140	do	146	140	31.2	17.0	5.4	12.7	20.3	6.8	6.8	Moderately worn.
Uganda: Gondokoro	165142	do	127	135	30.0	16.7	5.0	11.8	19.8	6.4	6.2	Do.
A. a. centrosus.												
Lado:												
Rhino Camp	165162	Male	145	130	32.8	17.1	5.2	12.8	21.2	7.1	6.8	Do.
Do	165165	do	153	128	33.8	18.0	5.5	13.6	21.7	7.1	6.8	Do.
Do	[1] 165167	do	129	114	31.2	16.5	4.8	11.7	20.5	6.9	7.0	Do.

Do	165170	...do.....	144	131	33.8	17.8	5.3	13.2	21.3	6.8	6.8	Considerably worn.
Do	165160	Female..	130	123	31.5	17.0	4.9	12.3	20.7	7.1	7.3	Little worn.
Do	165161	...do.....	137	120	32.2	17.5	5.2	12.2	21.3	6.8	6.8	Moderately worn.
Do	165166	...do.....	141	134	32.4	16.8	4.8	12.7	21.3	6.8	6.8	Little worn.
Do	165168	...do.....	149	135	32.7	17.4	5.0	13.2	21.1	7.1	7.0	Moderately worn.
Do	165169	...do.....	142	126	31.5	16.2	4.8	11.5	20.3	7.2	7.2	Do.
Do	165171	...do.....	129	113	31.3	16.5	5.1	11.7	20.2	6.8	6.5	Do.
A. a. rubescens.												
Uganda:												
Gondokoro	165150	Male....	146	124	31.2	16.3	4.6	12.4	19.6	6.8	6.3	Do.
Do	165156	Female..	150	122	33.4	18.0	5.2	13.2	21.1	6.9	6.5	Much worn.
Do	165157	...do.....	131	119	30.1	16.1	5.1	11.1	19.7	6.7	6.4	Considerably worn.
Butiaba	165148	Male....	156	127	32.2	17.4	5.0	13.1	20.0	6.5	6.4	Moderately worn.
Hoima	165147	Female..	144	119	31.6	17.4	5.2	11.8	20.5	6.5	6.5	Do.
Kisingo	165149	Male....	151	123	32.6	17.2	5.6	12.6	20.0	6.5	6.1	Do.
Kampala	165144	Female..	150	117	31.1	17.3	4.7	11.5	20.2	6.5	6.3	Do.
A. a. nubilans.												
B. E. A.:												
Kaimosi	183036	Male....	155	118	34.5	18.2	5.0	13.0	22.2	6.8	6.5	Do.
Do	183040	...do.....	155	112	33.0	17.8	5.1	13.8	20.7	6.4	6.4	Do.
Do	183043	...do.....	155	110	34.1	18.3	5.2	13.2	21.6	6.9	6.5	Do.
Do	183044	...do.....	150	114	33.0	17.8	4.9	12.3	19.9	6.6	6.5	Do.
Do	183038	Female..	140	115	31,8	16.5	4.6	12.2	20.3	6.9	6.5	Do.
Do	183042	...do.....	150	110	32.8	17.6	4.8	12.8	20.7	6.8	6.6	Do.
Do	183047	...do.....	150	109	32.2	17.7	5.0	12.7	21.6	6.5	6.8	Do.
Do	183051	...do.....	150	.....	32.3	17.3	4.5	12.5	20.2	6.2	6.4	Considerably worn.
Kisumu	183025	Male....	145	.....	32.1	17.6	4.8	12.3	20.5	7.0	6.8	Do.
Do	183027	...do.....	135	122	33.0	18.2	4.7	12.8	21.9	7.1	6.9	Do.
Do	183030	...do.....	150	.....	33.4	18.2	5.4	13.4	21.7	7.1	6.7	Do.
Do	183055	...do.....	150	.....	33.4	18.0	5.0	12.9	21.5	7.1	6.8	Moderately worn.
Do	183031	Female..	135	112	32.4	17.9	4.9	12.3	21.3	7.2	6.6	Do.
Do	183035	...do.....	145	116	32.0	17.3	4.5	12.2	20.5	6.8	6.6	Do.
Do	197969	...do.....	.....	.....	33.4	17.9	4.9	13.0	21.8	7.1	7.0	Do.

[1] Type.

Measurements of specimens of Arvicanthis—Continued.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylobasal length.	Zygomatic breadth.	Interorbital breadth.	Length of nasals.	Length of mandible.	Upper tooth row (alveoli).	Lower tooth row (alveoli).	Condition of molars.
A. a. nairobæ.												
B. E. A.:												
Nairobi	162746	Female.	135	100	30.4	16.3	4.3	11.4	20.3	6.6	6.3	Little worn.
Ulukenia Hills	163607	Male....	140	109	30.8	16.7	5.0	11.5	20.2	6.4	6.1	Much worn.
Do	163608	Female..	133	108	29.7	16.8	4.7	12.1	19.8	6.1	5.7	Do.
Do	163614	...do....	138	.....	30.6	16.7	4.7	12.1	20.6	6.4	6.3	Do.
Juja Farm	161723	Male....	123	116	29.9	16.6	4.8	11.5	19.7	6.4	6.3	Considerably worn.
Do	161735	...do....	144	.....	33.7	18.5	5.4	13.9	22.3	6.8	6.5	Much worn.
Do	161751	...do....	138	114	31.1	16.6	5.0	12.4	20.1	6.2	6.3	Moderately worn.
Do	161736	Female..	137	116	31.8	17.8	5.2	13.1	21.0	6.8	6.4	Do.
Do	161744	...do....	141	128	31.1	16.7	5.2	12.0	20.0	6.4	6.3	Do.
Do	161746	...do....	140	127	32.4	17.3	4.9	12.7	21.1	6.3	6.0	Do.
Do	161747	...do....	134	110	30.9	16.8	4.8	12.3	19.8	6.8	6.4	Do.
Engare Narok River	162639	Male....	131	119	30.3	16.0	4.5	11.8	20.2	5.8	5.8	Do.
Do	162640	Female..	131	109	29.8	16.8	4.9	11.9	19.6	6.3	6.3	Much worn.
A. a. præceps.												
B. E. A.:												
Naivasha Station	162651	Male....	168	119	33.8	18.2	4.8	13.2	21.6	6.9	6.7	Do.
Do	162652	Female..	144	105	32.2	17.2	4.7	12.2	20.9	6.8	6.3	Do.
Laikipia	183021	Male....	130	110	30.3	16.5	4.9	11.6	19.6	6.8	6.2	Moderately worn.
A. a. pallescens.												
B. E. A.:												
Southern Guaso Nyiro	162620	...do....	138	100	31.0	17.6	5.2	12.7	19.2	6.3	6.2	Considerably worn.
Do	162622	...do....	129	117	29.5	15.8	4.6	11.5	18.5	6.1	5.9	Little worn.
Do	162624	...do....	142	107	29.8	16.8	4.9	12.1	18.7	6.3	6.3	Moderately worn.
Do	162629	...do....	135	119	31.0	16.8	4.9	12.2	19.7	5.9	5.8	Little worn.
Do	162636	...do....	136	113	30.1	16.0	4.7	11.8	18.9	5.9	5.8	Do.

Do	162618	Female..	132	108	29.2	16.0	4.8	11.7	19.4	6.0	5.7	Moderately worn.
Do	162625	...do.....	122	106	28.2	15.8	4.6	11.3	18.4	6.2	6.1	Do.
Do	162630	...do.....	135	104	30.4	16.9	4.8	12.8	20.0	6.1	5.7	Considerably worn.
Do	162631	...do.....	137	110	30.2	16.5	4.7	12.2	19.5	6.2	6.1	Do.
A. a. virescens.												
B. E. A.: Voi	[1] 183922	Male....	125	103	30.4	16.6	4.8	11.9	20.0	6.3	5.9	Moderately worn.
A. a. chanleri.												
B. E. A.:												
Mount Lololokwi	182995	...do.....	135	102	30.8	16.9	5.0	12.8	20.2	6.5	6.4	Much worn.
Do	182996	...do.....	120	105	29.8	16.5	4.9	12.0	19.5	6.4	6.3	Moderately worn.
Do	182998	...do.....	122	102	.....	15.8	4.7	11.1	18.9	6.3	6.2	Do.
Do	182999	...do.....	126	.....	31.1	16.8	5.3	12.9	20.5	6.6	6.3	Much worn.
Do	183015	...do.....	120	110	31.3	16.8	5.1	12.2	20.3	6.3	6.3	Considerably worn.
Do	182991	Female..	110	90	27.6	15.7	4.8	11.2	18.0	6.3	6.3	Moderately worn.
Do	182992	...do.....	120	96	29.4	16.0	4.8	11.3	19.2	6.2	6.0	Considerably worn.
Do	183000	...do.....	120	102	28.0	15.5	4.4	10.8	18.5	6.4	6.4	Moderately worn.
Do	183005	...do.....	120	109	29.3	15.8	4.7	11.8	19.3	6.4	6.4	Do.
A. s. reptans.												
B. E. A.:												
Mount Lololokwi	183017	...do.....	113	.....	26.9	15.4	4.0	10.6	17.8	5.7	5.4	Do.
Lakiundu River	183068	Male....	125	124	28.6	15.8	4.5	11.1	17.9	6.0	5.7	Do.
Do	183075	...do.....	120	104	27.3	15.4	4.4	10.6	17.8	6.0	5.7	Do.
Do	183077	...do.....	124	116	28.3	16.3	4.5	12.2	18.3	5.9	5.5	Do.
Do	183072	Female..	110	113	26.9	14.8	4.5	11.3	17.2	6.0	5.8	Do.
Do	183076	...do.....	110	108	26.1	14.9	4.2	10.9	17.0	6.1	5.9	Little worn.
Archer's Post	183083	Male....	122	103	28.0	16.0	4.7	11.1	17.9	5.9	5.7	Considerably worn.
Do	183084	Female..	128	112	28.6	15.6	4.7	10.9	18.3	5.8	5.7	Moderately worn.
Isiola River	183065	Male....	112	93	26.5	14.8	4.4	10.8	17.4	5.4	5.2	Do.
Do	183063	Female..	125	.....	27.4	15.4	4.1	10.6	17.8	5.8	5.4	Do.
Lorian Swamp	183060	Male....	110	.....	26.5	14.8	4.5	10.5	17.4	5.8	5.5	Do.
Do	183061	...do.....	106	103	26.4	14.4	4.4	10.3	17.8	5.7	5.4	Do.

[1] Type.

Specimens.—Thirty-four, from localities as follows:

British East Africa: Archer's Post, 6, including 1 in alcohol (Heller); Isiola River, 7, including 2 in alcohol (Heller); Lakiundu River, 14, including 1 in alcohol (Heller); Lorian Swamp, 2 (Percival); Mount Lololokwi, 1 (Heller); Northern Guaso Nyiro River, 1 in alcohol (Cuninghame); Orr Valley, Mount Nyiro, 2 (Percival); South of Mount Nyiro, 1 (Percival).

This small species is found in the same localities with the much larger *Arvicanthis abyssinicus chanleri*, but the difference in the size of the skulls is so great that there should be no confusion in determining specimens.

Genus LEMNISCOMYS Trouessart.

1881. *Lemniscomys* Trouessart, Bull. Soc. Scient. Angers, vol. 10, pt. 2, p. 124. (*L. barbarus.*)

1912. *Lemniscomys* Heller, Smithsonian Misc. Coll., vol. 59. No. 16, pp. 11–12. July 5. (Part.)

1916. *Lemniscomys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 18, pp. 68–69. July.

This genus of striped grass rats as recognized by Thomas includes those species of the old genus *Arvicanthis* which have the fifth finger much shortened, with a nail instead of a claw. The East African species belong to three distinct groups. The *griselda* (*dorsalis*) group includes forms distinctly marked by a single median dorsal stripe. The forms of the *striatus* (*pulchellus*) group are marked by numerous rows of light spots, frequently blended. In the last group, including subspecies of *barbarus*, there are numerous uninterrupted lines running lengthwise over the entire upperparts.

LEMNISCOMYS GRISELDA MACULOSUS (Osgood).

1910. *Arvicanthis dorsalis maculosus* Osgood, Field Mus. Zool. ser., vol. 10, No. 3, p. 17. April 7. (Voi, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

1910. *Arvicanthis dorsalis maculosus* Roosevelt, African Game Trails, Amer. ed., p. 473; London, ed., p. 485.

1910. *Arvicanthis dorsalis phœotis* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 429. October. (Mazeras, British East Africa; type in British Museum.)

Specimens.—Twenty-seven, from the following localities:.

British East Africa: Changamwe, 15, including 8 in alcohol (Mearns); Maji-ya-chumvi, 2 (Heller); Mount Mbololo, 5 (Heller); Mount Sagalla, 3 (Heller); Mtoto Andei, 2 (Heller).

The differences given by Thomas in separating the Mazeras subspecies from *maculosus* prove to be too slight and too inconstant to warrant the recognition of a form from this region. The grayest specimens in our coast series are all rather young animals with the

Measurements of specimens of the Lemniscomys griselda group.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylo-basal length.	Zygomatic breadth.	Interorbital breadth.	Length of nasals.	Length of mandible.	Upper tooth row, (alveoli).	Lower tooth row, (alveoli).	Condition of molars.
L. g. maculosus.												
B. E. A.:												
Mtoto Andei	181735	Male	140	140	.....	.....	5.1	13.3	19.3	6.4	6.1	Much worn.
Do	181736	Female	123	147	.....	14.3	4.5	11.8	18.6	6.4	6.1	Moderately worn.
Mount Sagalla	183092	Male	130	135	30.4	15.6	5.0	12.4	19.0	6.3	5.9	Considerably worn.
Do	183093	...do	120	126	.....	14.8	4.7	11.9	18.7	6.3	6.0	Do
Do	183091	Female	135	145	30.8	15.3	4.7	12.7	19.0	6.5	6.4	Do.
Mount Mbololo	183087	Male	125	139	31.1	15.6	4.6	11.5	19.7	6.3	6.3	Do.
Do	183088	...do	120	120	28.3	14.4	4.7	11.5	17.9	5.8	5.9	Moderat y worn.
Do	183090	...do	130	140	31.2	15.2	4.8	13.0	19.8	6.4	6.2	Considerably worn.
Do	183086	Female	120	133	30.3	15.2	4.7	12.7	19.2	6.3	6.0	Do.
Do	183089	...do	125	139	.....	.....	.....	12.6	19.1	6.0	5.9	Do.
Maji-ya-chumvi	183094	Male	130	140	30.6	15.5	5.2	12.9	19.0	6.3	5.8	Little worn.
Do	183095	...do	130	138	30.5	15.4	4.4	13.3	19.4	6.3	5.9	Do.
Changamwe	163620	...do	122	140	.....	.....	.....	.....	.....	.....	.....	
Do	163618	Female	122	140	.....	.....	.....	.....	.....	.....	.....	
Do	163621	...do	132	148	.....	.....	.....	.....	.....	.....	.....	
Do	163622	...do	133	137	.....	.....	.....	.....	.....	.....	.....	
L. g. mearnsi.												
B. E. A.:												
Fort Hall	163617	Male	135	135	31.0	15.0	5.0	12.7	19.3	6.3	6.2	Moderately worn.
Do	163625	...do	127	133	.....	14.6	5.0	11.5	18.7	5.9	5.8	Little worn.
Do	[1] 163616	Female	131	141	.....	.....	.....	.....	.....	.....	.....	

[1] Type; see remarks on page 138.

teeth little worn, and all of the specimens from Taita Hills are much older, with the teeth showing more wear. There are several specimens from Changamwe and from the Taita Hills which are virtually indistinguishable in color. The color of the ears is alike in both series.

For the use of the specific name *griselda* in place of *dorsalis*, see a paper in 1916 by Thomas.[1]

Measurements of specimens of the subspecies of *Lemniscomys griselda* are given on page 137.

LEMNISCOMYS GRISELDA MEARNSI Heller.

1914. *Lemniscomys dorsalis mearnsi* Heller, Smithsonian Misc. Coll., vol. 63, No. 7, p. 12. June 24. (Fort Hall, British East Africa; type in U. S. Nat. Mus.).

Specimens.—Three, as follows:

British East Africa: Fort Hall (Loring).

This is a well marked subspecies, distinguished from *L. g. maculosus* by its much richer color. The skull measurements given in the original description are very misleading as they were taken from a skull of the much larger *Arvicanthis abyssinicus nairobæ* (U. S. N. M., 163601, from Nyeri), mismatched with the skin of *dorsalis* from Fort Hall which was selected by Heller as the type-specimen of *mearnsi*. The original field label on the skull plainly corrects the obvious error, but the skull really belonging with the type skin can not be found. Measurements of the skulls of two male topotypes are given in the table on page 137.

LEMNISCOMYS MACCULUS MACCULUS (Thomas and Wroughton).

1910. *Arvicanthis macculus* Thomas and Wroughton, Trans. Zool. Soc. Lond., vol. 19, p. 515. March. (Mokia, S. E. Ruwenzori, Uganda; type in British Museum.)

Specimens.—Ten, from the following localities:

Lado: Rhino Camp, 2 (Loring).

Uganda: Gondokoro, 1 (Loring); Kabula Muliro, 2, including 1 in alcohol (Loring); Kisingo, 2 (Loring); Nimule, 1 in alcohol (Heller).

British East Africa: Nzoia River, Guas Ngishu Plateau, 2, including 1 in alcohol (Heller).

This species, which apparently differs from *Lemniscomys striatus massaicus* only in its smaller size, has a wide distribution in the northern Victoria Nyanza region; but although there are large series of *Lemniscomys* in the collection from British East Africa, no specimens of *macculus* appear from east of the Nzoia River, Guas Ngishu Plateau. It would therefore seem that *macculus* is essentially a species of central Africa. Throughout its range it is found associated with *massaicus*, and as the two species are of exactly the same color, each exhibiting the same wide variations in this character, it is readily separated only by the small size of the hind foot and by the

[1] Ann. and Mag. Nat. Hist., ser. 8, vol. 18, p. 69. July, 1916.

smaller skull. My first idea was to consider these small specimens merely dwarfs of the larger species, *massaicus*, but from the fact that no specimens exactly intermediate in size between the two are found among adult examples, and taking into consideration the restricted range of the smaller animal while the larger form in some of its subspecies ranges across the whole continent, I am forced to the theory that *macculus* is a distinct species. Mr. Thomas has recorded the two species from the same localities, and has named a subspecies of *macculus* from the Welle area, Congo,[1] a region where the larger species is abundant. The specimens from Rhino Camp, Lado, might, theoretically, be supposed the same as the Welle River form, but I am unable to distinguish them from the Uganda examples of *macculus*. In describing his *Arvicanthis pulchellus micropus* from Lado, Heller[2] apparently meant to name this small form, but in selecting his type-specimen he chanced to take an example of the larger species, which I am unable to distinguish from *Lemniscomys striatus massaicus*. The hind foot measurement of his type as given in the original description is erroneous. It is stated to be 23 millimeters, but the foot actually measures, dry and without claws, 24.5, while the collector's field measurement with claws was 27 millimeters. The hind foot in specimens I refer to *macculus* measures, dry, from 21 to 23 millimeters. Five of the specimens referred by Heller to *micropus*, including the single skin from Gondokoro, I have placed under *macculus*.

For measurements of specimens see page 140.

LEMNISCOMYS STRIATUS MASSAICUS (Pagenstecher).

Plate 36.

1885. *Mus* (*Lemniscomys*) *barbarus* L. var. *massaicus* PAGENSTECHER, Jahrb. Hamb. Wiss. Anst., vol. 2, p. 45; Nat. Mus. Hamburg Ber., 1884, p. 45. (Lake Naivasha, British East Africa.)

1910. *Arvicanthis pulchellus massaicus* ROOSEVELT, African Game Trails, Amer. ed., pp. 473, 478 ("*masaicus*"); London ed., pp. 485, 490 ("*masaicus*").

1911. *Arvicanthis pulchellus micropus* HELLER, Smithsonian Misc. Coll., vol. 56, No. 17, p. 9. February 28. (Rhino Camp, Lado; type in U. S. Nat. Mus.)

1912. *Lemniscomys pulchellus spermophilus* HELLER, Smithsonian Misc. Coll., vol. 59, No. 16, p. 11. July 5. (Mt. Gargues, Mathews Range, British East Africa; type in U. S. Nat. Mus.)

Specimens.—One hundred and three, from the following localities:

LADO: Rhino Camp, 19, including 2 in alcohol and 7 odd skulls.

UGANDA: Hoima, 2, including 1 in alcohol (Loring); Kampala, 1 (Loring); Kisingo, 3, including 2 in alcohol (Loring); Ledgus, 1 in alcohol (Loring).

BRITISH EAST AFRICA: Engare Narok River, 7, including 2 in alcohol (Loring); Engare Ndare River, 1 (Heller); Guas Ngishu

[1] *Arvicanthis macculus akka*, Ann. and Mag. Nat. Hist., ser. 8, vol. 16, p. 479. Dec., 1915.

[2] Smithsonian Misc. Coll., vol. 56, No. 17, p. 9. Feb. 28, 1911.

Measurements of specimens of the Lemniscomys striatus group.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylo-basal length.	Zygomatic breadth.	Interorbital breadth.	Length of nasals.	Length of mandible.	Upper tooth row (alveoli).	Lower tooth row (alveoli).	Condition of molars.
L. m. macculus.												
Lado:												
Rhino Camp	165188	Female..	98	108	23.2	11.8	4.3	9.4	14.0	4.8	4.7	Little worn.
Do	165189	...do.....	109	124	25.7	12.7	4.5	11.1	15.4	5.0	4.8	Moderately worn.
Uganda:												
Gondokoro	165172	...do.....	97	107	24.2	12.6	3.9	10.2	15.2	4.9	4.7	Do.
Kisingo	165174	Male....	111	102	24.8	12.9	4.4	9.8	15.7	5.0	5.0	Considerably worn.
Do	165178	...do.....	122	118	27.0	13.3	4.6	10.3	16.7	5.0	4.8	Much worn.
Kabula Muliro	165206	Female..	112	113	25.8	13.0	4.7	10.0	16.0	4.9	4.5	Do.
B. E. A.: Nzoia River	163631	...do.....	95	94	23.8	12.3	4.4	10.0	14.5	5.0	4.8	Little worn.
L. s. massaicus.												
Lado:												
Rhino Camp	165180	Male....	119	140	27.3	13.4	4.9	11.9	16.8	5.2	4.9	Moderately worn.
Do	165183	...do.....	107	142	26.5	13.5	4.6	11.8	15.8	5.2	5.0	Do.
Do	165187	...do.....	118	135	27.3	14.0	4.9	11.8	16.7	5.2	4.9	Considerably worn.
Do	165190	...do.....	112	130	26.0	13.5	5.0	10.2	15.7	5.2	5.0	Moderately worn.
Do	[1] 164825	Female..	114	125	25.7	13.0	4.8	10.7	15.9	5.2	4.8	Do.
Do	165182	...do.....	99	134	25.0	13.2	4.9	9.8	15.2	5.0	5.0	Do.
Do	165184	...do.....	122	134	27.6	14.4	4.7	11.6	17.2	5.3	5.1	Much worn.
Do	165185	...do.....	118	133	27.3	13.7	4.7	10.9	16.8	5.4	5.1	Moderately worn.
Do	165186	...do.....	115	147	25.7	13.8	4.9	11.0	15.5	5.3	5.2	Do.
Uganda:												
Hoima	165177	Male....	116	134	26.7	13.6	4.8	11.2	16.0	5.0	5.1	Do.
Kisingo	165175	Female..	123	141	28.0	14.6	4.9	11.6	17.6	5.2	5.2	Do.
Kampala	165173	Male....	103	115	24.9	13.2	4.9	11.5	15.8	4.9	4.8	Do.
B. E. A.:												
Kaimosi	183815	...do.....	118	.....	27.6	14.2	5.0	11.7	16.7	5.2	5.2	Do.
Do	183817	...do.....	115	.....	28.2	13.8	4.6	11.5	16.6	5.2	5.2	Do.

Do	183818	...do.....	120	150	28.2	14.1	5.0	11.5	16.1	5.0	5.1	Considerably worn.
Do	183824	...do.....	125	141	27.8	14.0	5.0	11.8	16.5	5.1	5.1	Moderately worn.
Do	183816	Female..	112	136	26.2	13.9	4.8	10.7	16.1	5.0	5.2	Do.
Do	183819	...do.....	115	131	26.6	13.8	4.6	10.5	16.0	4.8	4.8	Do.
Naivasha	162689	Male....	113	128	27.6	14.2	4.8	11.8	16.2	5.3	5.2	Do.
Do	162690	...do.....	114	134	27.3	13.9	4.9	11.8	16.2	4.9	5.1	Do.
Do	162692	...do.....	107	137	27.0	13.2	4.5	11.4	16.4	5.1	5.2	Do.
Do	162706	...do.....	130	147	28.6	14.4	4.8	12.2	17.2	5.1	5.1	Do.
Do	162691	Female..	107	117	25.9	13.4	4.9	10.7	15.9	5.2	4.9	Do.
Do	162709	...do.....	109	116	26.3	13.9	4.6	11.3	16.8	5.4	5.3	Little worn.
Engare Narok River	162685	Male....	126	151	29.0	14.7	5.1	11.8	17.1	5.4	5.3	Much worn.
Do	162683	Female..	113	138	27.7	13.8	4.8	12.2	16.9	5.2	5.3	Moderately worn.
Do	162684	...do.....	121	143	28.2	14.6	5.0	12.0	17.0	5.4	5.3	Much worn.
Oljoro O Nyon River	162678	...do.....	135	.....	27.1	14.0	4.8	11.8	17.0	5.2	5.2	Moderately worn.
Do	162682	...do.....	116	135	27.3	13.7	4.7	12.3	16.5	5.1	5.0	Much worn.
Mount Gargues	183840	Male....	120	.....	27.4	13.6	4.7	11.3	16.6	5.3	4.9	Considerably worn.
Do	183841	...do.....	108	149	26.3	13.6	4.6	10.5	15.9	5.4	5.2	Moderately worn.
Do	183842	...do.....	118	150	27.6	13.9	4.7	11.3	16.2	5.2	5.2	Do.
Do	183834	...do.....	113	137	26.0	13.1	4.9	10.6	16.2	5.2	5.0	Do.
Do	183835	...do.....	112	132	27.0	13.8	5.0	11.5	16.7	5.4	5.3	Do.
Do	184191	...do.....	105	120	26.3	14.4	5.0	10.5	16.6	5.1	4.9	Do.
Do	[2] 181800	Female..	120	139	28.1	14.3	4.9	11.3	17.8	5.6	5.4	Considerably worn.
L. s. ardens.												
B. E. A.:												
Juja Farm	161764	...do.....	130	125	28.8	15.8	5.2	12.5	17.6	5.4	5.2	Do.
Kamiti	163635	...do.....	122	127	27.0	13.4	4.5	11.3	16.4	5.1	5.3	Moderately worn.
Do	163634	...do.....	129	135	28.1	13.7	4.9	11.8	16.7	5.3	5.0	Do.
Fort Hall	163642	Male....	118	122	27.5	14.3	4.6	11.2	16.7	5.3	4.9	Considerably worn.
Do	163658	...do.....	128	134	28.1	13.8	4.8	11.8	17.3	5.4	5.1	Moderately worn.
Do	163657	Female..	109	126	26.5	13.4	4.9	11.8	16.8	5.3	4.8	Do.
Wambugu	163654	Male....	127	152	28.4	13.6	4.8	12.3	17.3	5.4	5.2	Do.
Do	163652	Female..	116	136	26.6	14.0	5.0	11.1	16.3	5.2	4.9	Do.
Nyeri	163648	Male....	110	128	25.2	13.0	4.5	11.3	15.9	5.1	4.8	Do.

[1] Type of *Arvicanthis pulchellus micropus* Heller.

[2] Type of *Lemniscomys pulchellus spermophilus* Heller.

Boma, 1 (Heller); Isiola River, 1 (Heller); Kaimosi, 19, including 6 in alcohol (Heller); Kakumega, 2 (Heller); Kibabe, Nandi Hills, Kisumu, 1 (Heller); Kisumu, 1 (Heller); Lake Naivasha, 12, including 2 in alcohol (Loring); Lukosa River, 3 (Heller); Mission, Kisumu, 1 (Heller); Mount Gargues, 13, including 1 in alcohol (Heller); Mount Kenia, west slope at 7,000 feet, 1 in alcohol (Heller); Naivasha Station, 10 (Loring, Mearns); Oljoro O Nyon River, 3 (Loring, Heller); Telek River, Sotik, 1 (Heller).

As will be noted from the above list of localities, this species has an extraordinarily extensive range in East Africa, much larger than most species of small mammals known from the region. While there is considerable variation in color and size it does not seem to have geographical significance, and I am unable to divide the form in any satisfactory way. The specimens from the vicinity of Kavirondo Gulf average darker than any other large lot but the difference after all is slight. The specimens from Lado, including the type of *Lemniscomys pulchellus micropus* (Heller) are perhaps slightly lighter in color than the average run of specimens from British East Africa, but they can be matched almost exactly by skins in the Naivasha series (type locality of *massaicus*) and the difference is entirely too little to recognize as of subspecific value. It may, as a matter of fact, be seasonal, as the Lado series was collected in January, while most of the East African material was taken at other seasons. The Mount Gargues series, allowing for the particularly fresh condition of pelage, is certainly indistinguishable from typical *massaicus*. The species seems to be one of very constant average coloration. Thomas, in writing of specimens of *striatus* from the Upper Congo, has said:

> Allowing for their variation in color according to freshness of fur, there seems remarkably little difference between these specimens and the E.-African *A. massaicus*, on the one hand, and true W.-African *A. striatus*, including *A. pulchellus*, on the other.

I can only distinguish our West African material by its slightly richer color, and specimens from Liberia and Cameroons are, as Mr. Thomas states, remarkably like the skins from British East Africa.

As shown in the tables of measurements, there is virtually no difference in size between specimens from all parts of the range. Additional measurements of the hind foot in large series of *massaicus*, give the following averages: Lado and Uganda, 25.2 millimeters; British East Africa, excepting Mount Gargues, 26.1; Mount Gargues, 25.7. These measurements were taken without claws, from the dry skin. The measurement of the hind foot of the type specimen of "*micropus*," as printed in the original description is erroneous. It is there given as 23 millimeters, but the foot dry without claws actually measures 24.5, and the collector's field measurement, with claws, is 27 millimeters.

Measurements of specimens of the Lemniscomys barbarus group.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylo-basal length.	Zygomatic breadth.	Interorbital breadth.	Length of nasals.	Length of mandible.	Upper tooth row (alveoli).	Lower tooth row (alveoli).	Condition of molars.
L. b. zebra.												
Lado:												
Rhino Camp	165195	Male	106	129	24.8	12.8	4.3	9.8	14.9	5.1	4.9	Moderately worn.
Do	165201	do	102	118	24.0	11.7	4.1	10.2	15.1	5.0	4.8	Do.
Do	165202	do	102	112	25.2	12.6	4.2	10.5	15.7	5.3	5.2	Do.
Do	165191	Female	89	120	23.9	11.9	4.3	.....	14.1	4.8	4.8	Little worn.
Do	165193	do	94	125	24.3	12.5	4.5	10.2	15.0	4.8	4.7	Moderately worn.
Do	165194	do	96	124	25.2	12.6	4.2	10.2	15.4	5.1	5.0	Do.
Do	165196	do	97	122	24.5	12.6	4.3	10.1	15.0	5.1	4.9	Do.
Do	165198	do	97	133	24.7	12.7	4.3	10.7	15.0	4.8	4.8	Do.
Do	165200	do	96	116	22.8	11.6	4.1	9.5	14.0	4.8	4.8	Do.
Do	165203	do	111	.....	.....	12.8	4.2	11.4	15.7	5.2	4.9	Much worn.
Do	165204	do	103	125	24.5	12.3	4.4	9.8	15.2	4.9	4.8	Moderately worn.
Do	165205	do	112	.....	.....	.....	4.5	10.5	16.2	5.3	5.1	Much worn.
Uganda: Gondokoro	165192	do	104	115	24.4	12.5	4.4	10.0	15.0	5.1	4.8	Considerably worn.
L. b. albolineatus.												
B. E. A.: Ulukenia Hills	162884	Female	106	109	25.2	13.5	4.3	10.8	15.8	5.2	5.0	Do.
L. b. convictus.												
B. E. A.:												
Mtoto Andei	181737	Male	100	113	24.4	13.3	4.3	10.5	14.8	5.1	5.1	Moderately worn.
Do	181739	do	100	114	26.2	13.1	4.4	10.8	16.0	5.0	4.9	Much worn.
Do	181740	do	95	112	23.4	12.7	4.0	9.8	14.7	5.0	4.8	Moderately worn.
Do	181738	Female	100	113	24.8	13.2	4.1	10.5	15.3	5.0	4.8	Do.

Breeding records are furnished by the following collector's notes on embryos, taken from specimens prepared: Isiola River, June 30, four embryos; Kaimosi, January 24, two embryos; Kakumega, February 17, two embryos; Lake Naivasha, July 13, three embryos; Lake Naivasha, July 17, four embryos.

For measurements of specimens of this and the following subspecies of *Lemniscomys striatus* see pages 140–141.

LEMNISCOMYS STRIATUS ARDENS (Thomas).

1892. *Mus barbarus* TRUE, Proc. U. S. Nat. Mus., vol. 15, p. 460. (Not of Linnæus.)

1910. *Arvicanthis pulchellus ardens* THOMAS, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 313. September. (Rombo, Mount Kilimanjaro, German East Africa; type in British Museum.)

Specimens.—Fifty-two, from localities as follows:

BRITISH EAST AFRICA: Fort Hall, 13, including 3 in alcohol (Loring, Mearns); Juja Farm, 3, including 2 in alcohol (Loring); Kamiti, Athi Palins, 7, including 2 in alcohol (Loring); Nairobi, 1 (Mearns); Nyeri, 1 (Loring); Saba Saba, 2, including 1 in alcohol (Loring); Taveta, 1 in alcohol (Abbott); Thika River, 6, including 3 in alcohol (Loring, Mearns); Ulukenia Hills, 1 (Loring); Wambugu, 11, including 4 in alcohol (Loring).

GERMAN EAST AFRICA: Mount Kilimanjaro, 6, including 4 in alcohol (Abbott).

This geographical race is separated from true *massaicus* by the more reddish average coloration. While many examples of each race are indistinguishable, the lots as a whole are of quite different color. The richest colored examples are from Wambugu and Fort Hall. There is a great range of individual variation in the intensity of the reddish suffusion.

LEMNISCOMYS BARBARUS ZEBRA (Heuglin).

1864. *Mus zebra* HEUGLIN, Nov. Act. Acad. Caes. Leop., vol. 31, Abhandl., No. vii, p. 10. ("Lande der Req-Neger, Djur und Bongo," Sudan.)

Specimens.—Twenty, from localities as follows:

LADO: Rhino Camp, 17, including 5 in alcohol (Loring).

UGANDA: Gondokoro, 2, including 1 in alcohol (Loring); Nimule, 1 in alcohol (Heller).

For measurements of specimens of this and other subspecies of *Lemniscomys barbarus* see page 143.

LEMNISCOMYS BARBARUS ALBOLINEATUS (Osgood).

1910. *Arvicanthis barbarus albolineatus* OSGOOD, Field Mus. Zool. ser., vol. 10, No. 2, p. 11. February. (Ulukenia Hills [Lukenya Mountain], British East Africa; type in Field Mus. Nat. Hist., Chicago.)

1910. *Arvicanthis barbarus albolineatus* ROOSEVELT, African Game Trails, Amer. ed., p. 473; London ed., p. 485.

Specimen.—One topotype:

BRITISH EAST AFRICA: Ulukenia Hills, Athi Plains (Loring).

Measurements of specimens of Rhabdomys p. diminutus.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Skull: Condylo-basal length.	Zygomatic breadth.	Inter-orbital breadth.	Length of nasals.	Length of mandible.	Upper tooth row (alveoli)	Lower tooth row (alveoli).	Condition of molars.
B. E. A.:												
Naivasha	162718	Male	105	.....	25.7	13.8	4.1	9.8	15.8	4.9	4.8	Moderately worn.
Do	162721	..do	111	87	25.7	13.3	4.2	8.8	14.8	4.9	4.8	Do.
Do	162728	...do	119	.....	25.1	13.1	4.0	9.4	15.3	4.8	4.6	Do.
Do	162729	...do	108	94	24.1	12.1	4.0	8.8	14.8	4.9	4.8	Little worn.
Do	162737	...do	112	87	24.9	13.0	4.1	9.4	15.0	5.2	4.9	Considerably worn.
Do	162723	Female	113	97	26.4	13.8	4.4	9.0	16.2	4.8	4.8	Moderately worn.
Do	162730	...do	121	94	25.2	13.0	4.0	9.1	15.8	4.8	4.8	Do.
Do	162739	...do	120	92	26.2	13.3	3.9	9.5	15.9	5.1	5.1	Do.
Guas Ngishu Plateau	164161	Male	110	87	21.2	13.0	4.3	8.3	15.1	4.7	4.8	Do.
Do	164160	Female	105	94	23.9	12.5	3.9	8.3	14.2	4.8	4.8	Do.
Do	164162	...do	105	90	24.4	12.7	4.1	8.8	14.9	4.9	4.8	Do.
Aberdare Mountains	164159	Male	122	87	25.9	13.8	4.2	9.4	16.3	5.1	5.1	Much worn.
Do	183098	...do	103	80	24.2	12.2	4.0	8.4	14.5	4.7	4.7	Moderately worn.
Do	183097	Female	108	92	25.2	13.8	4.1	8.8	15.2	4.8	4.8	Considerably worn.
Do	183099	...do	98	.....	23.3	12.7	3.9	8.8	13.9	4.6	4.5	Much worn.
Do	183100	...do	110	89	25.0	12.9	4.2	9.3	15.3	4.8	4.8	Moderately worn.
Nyeri	161168	Male	115	85	24.6	12.3	4.0	8.2	.....	4.8	.....	Little worn.
Do	161170	...do	112	84	24.0	12.3	4.1	8.9	14.9	4.8	4.8	Moderately worn.
Do	161182	...do	124	82	25.7	12.8	4.2	9.3	15.2	4.8	4.8	Do.
Do	161166	Female	115	.....	24.7	12.5	3.9	8.8	15.8	4.8	4.5	Do.
Do	161173	...do	98	74	23.0	11.6	3.9	7.4	14.0	4.6	4.5	Little worn.
Do	161183	...do	124	95	26.5	13.4	4.4	9.3	15.6	4.8	4.5	Much worn.
Mount Kenia	164185	...do	.....	.....	23.9	12.0	4.0	8.4	15.0	5.1	4.9	Moderately worn.
Do	164187	...do	129	96	26.3	13.2	4.3	9.5	16.5	5.0	4.8	Do.
Do	161190	...do	121	87	25.1	12.7	4.2	8.8	15.1	5.1	4.8	Do.
Do	161191	...do	106	85	23.6	11.6	3.8	8.2	15.2	4.8	4.9	Do.

LEMNISCOMYS BARBARUS CONVICTUS (Osgood).

1910. *Arvicanthis barbarus convictus* Osgood, Field Mus. Zool. ser., vol. 10, No. 2, p. 10. February. (Voi, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

Specimens.—Five, including 1 in alcohol, as follows:
British East Africa: Mtoto Andei (Heller).

Genus RHABDOMYS Thomas.

1916. *Rhabdomys* Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 18, p. 69. July. (*R. pumilio.*)

The group of species of the old genus *Arvicanthis* including *pumilio* and its allies has been recognized by Thomas as a distinct genus. The forms all have four dark stripes on the back and a normal fifth finger with claw.

RHABDOMYS PUMILIO DIMINUTUS (Thomas).

1892. *Isomys pumilio diminutus* Thomas, Proc. Zool. Soc. London, 1892, p. 551. (Mianzini, east of Lake Naivasha, British East Africa; type in British Museum.)

1910. *Arvicanthis pumilio diminutus* Roosevelt, African Game Trails, Amer. ed., pp. 473 and 479; London ed., pp. 485 and 490.

Specimens.—Eighty-seven, from localities as follows:
British East Africa: Aberdare Mountains, 7, including 1 in alcohol (Heller); Guas Ngishu Plateau, 30 miles north of Ravine, 5, including 2 in alcohol (Heller); Laikipia, 1 in alcohol (Heller); Mount Kenia, 19, including 4 in alcohol (Loring, Mearns); Naivasha Station, 28, including 2 in alcohol (Loring); Nyeri, 27, including 4 in alcohol (Loring).

Loring found two females each with five large fetuses at Nyeri, September 16; and one at the same place, September 17, with three fetuses. Most of the Mount Kenia specimens are from the West Kenia Forest Station at 7,500 feet altitude, but Doctor Mearns caught one specimen at 10,000 feet on Kenia, and Heller found the species common on the summit of the Aberdare Range. Specimens from Nyeri and Mount Kenia average slightly more reddish than the Naivasha skins, but the difference is insignificant and may be seasonal, as the Naivasha specimens were collected in July and early August while the Kenia material was taken in September and October. For measurements see page 145.

Genus OTOMYS Cuvier.

1823. *Otomys* Cuvier, Dents Mamm., p. 168. (*O. irroratus.*)

1831. *Otomis* Bonaparte, Giorn. Arcad. di Sci. Lett. Art., Roma, vol. 53, p. 193.

1918. *Otomys* Thomas, Ann. and Mag. Nat. Hist., ser. 9, vol. 2, p. 207. September. (Revision of superspecific groups.)

In listing the swamp rats in the collection I have followed the arrangement of Dollman,[1] which seems quite satisfactory so far as our

[1] On the Swamp-Rats (*Otomys*) of East Africa, Ann. and Mag. Nat. Hist., ser. 8, vol. 15, pp. 149–170. January, 1915.

material is concerned. In cases where alcoholic specimens are from localities represented by good series of skins and skulls, it has seemed unnecessary to remove the skulls. Such specimens have been identified with the series of skins and skulls taken by the same collector at the same time and place.

For measurements of specimens of the swamp rats of the genus *Otomys* see table, pages 150–151.

OTOMYS THOMASI THOMASI Osgood.

1910. *Otomys thomasi* Osgood, Field Mus. Nat. Hist., Zool. ser., vol. 10, No. 2, p. 9. February. (Molo, British East Africa; type in Field Mus., Chicago.)

Specimen.—One, as follows:

British East Africa: Guas Ngishu Plateau, 20 miles north of Ravine (Heller).

OTOMYS THOMASI SQUALUS Dollman.

1915. *Otomys thomasi squalus* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 15, p. 155. January. (Mount Kinangop, Aberdare Range, British East Africa, 12,000 feet; type in British Museum.)

Specimens.—Twenty-one, including seven in alcohol, as follows:

British East Africa: Aberdare Mountains, summit, 10,500 to 11,000 feet (Heller).

Two females collected on October 11 contained one large embryo each.

OTOMYS ORESTES Thomas.

1900. *Otomys irroratus orestes* Thomas, Proc. Zool. Soc. London, 1900, p. 175. (Teleki Valley, Mount Kenia, at 13,000 feet, British East Africa; type in British Museum.)

1910. *Otomys irroratus orestes* Roosevelt, African Game Trails, Amer. ed., p. 472; London ed., p. 484.

Specimens.—Sixteen, as follows:

British East Africa: Mount Kenia (Loring, Mearns).

These specimens were trapped on the western side of the mountain at altitudes of 10,700, 13,500, and 13,700 feet. The last upper molar has six laminæ in all specimens except one (No. 164329) in which there are distinctly seven, the last very small. This specimen is unquestionably *orestes*, however, as it agrees with the other specimens of the series in color, size, and the peculiar arched appearance of the skull, as opposed to *O. tropicalis*. It is the most aged specimen in the series.

OTOMYS DOLLMANI Heller.

Plate 37.

1912. *Otomys orestes dollmani* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 5. July 5. (Mount Gargues, Mathews Range, British East Africa, 7,000 feet; type in U. S. Nat. Mus.)

Specimens.—Seven, including one odd skull, as follows:

British East Africa: North Creek, Mount Gargues, at 6,000 feet (Heller).[1]

[1] Stated 7,000 feet in original description but specimens are all labeled 6,000 feet.

This form while agreeing with *Otomys orestes* of Mount Kenia in having only six laminæ in the last upper molar differs so greatly in other characters that it should not be considered a subspecies of *orestes* unless actual intergrading specimens are found. It is much darker in color, has a considerably longer tail, and the skull lacks almost entirely any appearance of the highly arched interorbital region or wide spreading zygomata of *orestes*. The skull is in fact almost exactly like skulls of the *tropicalis* group except for small size and the lamina formula.

OTOMYS TROPICALIS TROPICALIS Thomas.

1902. *Otomys irroratus tropicalis* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 10, p. 314. October. (Western slope of Mount Kenia, 10,000 feet, British East Africa; type in British Mus.)

Specimens.—One hundred and six, including 43 in alcohol, as follows:

British East Africa: Mount Kenia, west slope (Loring, Mearns).

These specimens were collected at altitudes ranging from 7,500 feet up to 13,700 feet.

About half a dozen specimens from this large series have eight laminæ in the last upper molars; the additional lamina small and subcircular. There is considerable variation in specimens of the swamp rat which I have here placed under *tropicalis*, but I have been unable to sort the material out into two forms. I have mistrusted at times during work on the genus that there is a form represented in the Kenia material which is related to *Otomys thomasi squalus* of the Aberdare range. In the Aberdares the two groups, *thomasi* and *tropicalis*, are perfectly distinct and easily separated, however, a condition which does not exist on Kenia unless I have been confused by mismatched skulls in the Kenia collection.

Mearns records the color of the iris in *O. tropicalis* as hazel brown and the mammæ as two pairs, inguinal, close together.

OTOMYS TROPICALIS ELGONIS Wroughton.

1910. *Otomys irroratus elgonis* Wroughton, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 207. February. (Elgonyi, Mt. Elgon, British East Africa; type in British Museum.)

Specimens.—Fifty, from localities as follows:

British East Africa: Aberdare Mountains, summit at 11,000 feet, 4 (Heller); Changongorra, Aberdare Mountains, 5 (Heller); Eldoma Ravine, 12 miles north of Ravine Station, 8, including 7 in alcohol (Heller); Guas Ngishu Plateau, 30 miles north of Ravine, 4 (Heller); Kaimosi, 17, including 2 in alcohol (Heller); Kakumega, 1 (Heller); Mount Kenia, west side at 7,000 feet, 1 (Heller); Naivasha Plains, base of Aberdare Mountains, 1 (Heller); Nyeri, 10 miles east,

1 (Heller); Nzoia River, Guas Ngishu Plateau, 8, including 4 in alcohol, (Heller).

The range of this dark form meets that of typical *tropicalis* on the lower levels of Mount Kenia. A specimen from 7,000 feet on the west side of the mountain is clearly referable to *elgonis*, while skins from 7,500 feet are placed with *tropicalis*. Specimens from the summit of the Aberdares are slightly less richly colored than are skins from lower down, but otherwise the series is remarkably uniform in its deep coloration, and skins from the Kakumega and Kaimosi regions are not distinguishable in color from skins collected at the eastern base of the Aberdares. Kaimosi specimens average slightly smaller than specimens from other parts of the range of the form.

A female collected at Kaimosi, January 27, contained one embryo; one collected at Changongorra, October 10, two embryos; and one from the same locality at the same time, one large embryo.

OTOMYS ANGONIENSIS ELASSODON Osgood.

1892. *Otomys irroratus* True, Proc. U. S. Nat. Mus., vol. 15, p. 464. (Not of Brants.)

1910. *Otomys angoniensis elassodon* Osgood, Field Mus. Nat. Hist., Zool. ser., vol. 10, No. 2, p. 10. February. (Naivasha, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

Specimens.—Twenty-two, from the following localities:

British East Africa: Lake Naivasha, 1 (Loring); Mayo River, Laikipia, 15 miles north of Nyeri, 3, including 2 in alcohol (Heller); Nairobi, 1 in alcohol (Mearns); Naivasha Station, 10, including 2 in alcohol (Loring); Northern Guaso Nyiro River, 1 in alcohol (Cuninghame); Nyeri, 2 (Loring).

German East Africa: Mount Kilimanjaro, 4 (Abbott).

Kilimanjaro specimens seem inseparable from specimens collected at Naivasha. The alcoholic specimens from Nairobi and from the Northern Guaso Nyiro River are both young and not determinable with certainty, but appear to belong to this form, which has been recorded from these localities.

OTOMYS NYIKÆ CANESCENS Osgood.

1910. *Otomys nyikæ canescens* Osgood, Field Mus. Nat. Hist., Zool. ser., vol. 10, No. 2, p. 10. February. (Kijabe, British East Africa; type in Field Mus. Nat. Hist., Chicago.)

Specimens.—Sixteen, from the following localities:

British East Africa: Engare Narok River, 8 (Loring, Heller); Engare Ndare River, 2 (Heller); Njoro O Nyiro River, 1(Heller); Southern Guaso Nyiro River, 2, including 1 in alcohol (Loring); Ulukenia Hills, 3, including 1 in alcohol (Loring).

Heller records three embryos in a female collected at the Engare Ndare River, June 29.

Measurements of specimens of Otomys from East Africa.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot.[1]	Skull: Condylobasal length.	Zygomatic breadth.	Height from sinciput to alveolar border of m^3.	Greatest breadth of nasals.	Interorbital constriction.	Length of upper tooth row, crowns.	Observations.
O. t. thomasi.												
Guas Ngishu Plateau	164290	Female	162	88	30	38.3	20.5	13.6	7.3	3.8	8.2	Teeth considerably worn.
O. t. squalus.												
Aberdare Mountains	184024	Male	170	96	26	37.9	21.1	12.6	7.8	4.3	8.6	Teeth moderately worn.
Do	184031	...do	150	91	28	36.5	20.0	11.4	7.1	4.1	8.0	Do.
Do	184035	...do	155	93	27	37.0	19.6	13.0	7.0	3.9	8.6	Do.
Do	164280	Female	175	94	29	36.5	19.3	11.3	7.2	4.2	8.6	Do.
Do	184030	...do	170	90	26	36.4	20.3	12.0	7.1	4.4	8.3	Teeth considerably worn.
Do	184033	...do	150	78	25	35.2	19.5	12.5	6.7	4.3	8.2	Teeth moderately worn.
Do	184039	...do	170	92	27	37.7	19.6	12.2	7.4	4.3	9.0	Do.
O. orestes.												
Mount Kenia	164313	Male	151	70	30	33.4	18.1	11.4	.....	3.9	7.4	Teeth little worn.
Do	164329	...do	175	77	30	36.4	19.7	13.0	6.5	3.9	8.5	Teeth considerably worn.
Do	164333	Female	.....	.....	.....	33.1	16.8	11.4	6.4	3.8	7.2	Teeth little worn.
Do	164357	...do	163	65	28	.....	18.5	12.0	6.4	4.0	7.9	Teeth moderately worn.
Do	164358	...do	168	66	30	32.8	17.5	12.1	6.2	3.9	7.0	Teeth little worn.
O. dollmani.												
Mount Gargues	[2] 181790	Male	150	88	25	34.2	17.8	10.8	6.5	4.2	7.2	Teeth moderately worn.
Do	184042	...do	150	105	27	35.0	17.8	10.8	6.8	.....	7.2	Do.
Do	184041	Female	140	91	26	32.1	.....	9.9	6.3	4.3	6.9	Teeth little worn.
Do	184043	...do	138	88	25	31.2	16.2	9.9	6.2	4.0	6.9	Do.
Do	184044	...do	150	95	25	34.4	17.9	10.9	6.7	4.1	7.7	Teeth considerably worn.
Do	184046	...do	140	85	23	32.7	16.9	10.3	6.1	4.2	7.0	Teeth moderately worn.
O. t. tropicalis.												
Mount Kenia	164291	Male	175	92	33	36.7	17.5	11.5	6.8	4.0	8.3	Do.
Do	164352	...do	178	80	34	39.8	20.1	12.8	7.9	4.2	8.7	Do.
Do	164353	...do	174	86	33	38.9	19.9	12.5	7.3	4.1	8.5	Do.
Do	164360	...do	184	87	32	38.7	.....	13.2	7.4	4.5	9.1	Teeth considerably worn.

Do	164365	...do....	170	70	32	37.0	20.1	11.6	7.3	4.5	8.5	Teeth moderately worn.
Do	164361	Female .	181	83	32	38.3	.....	11.8	7.4	4.1	8.9	Do.
Do	164372	...do....	182	90	33	40.0	.....	13.2	7.8	4.5	9.0	Teeth considerably worn.
Do	164375	...do....	182	88	31	37.3	.....	12.1	7.0	3.8	8.6	Do.
O. t. elgonis.												
Guas Ngishu Plateau	164282	Male....	205	102	33	41.3	21.0	13.2	8.2	4.9	8.8	Do.
Do	164286	Female .	180	98	34	41.2	20.9	13.3	8.0	4.4	8.2	Do.
Do	164287	...do....	175	92	32	38.5	18.6	12.2	7.3	4.3	7.9	Do.
Ravine	164281	Male....	180	98	34	39.5	20.1	12.6	7.3	4.4	8.6	Do.
Kaimosi	184003	...do....	165	95	27	36.4	18.8	11.0	7.2	4.5	7.7	Teeth moderately worn.
Do	184004	...do....	160	99	27	38.2	18.9	11.7	7.1	4.5	8.4	Teeth considerably worn.
Do	184017	...do....	170	98	28	36.7	18.5	11.2	6.4	4.6	8.1	Teeth moderately worn.
Do	184014	Female .	160	83	26	36.2	18.5	11.4	6.8	4.4	8.5	Teeth considerably worn.
Do	184016	...do....	168	.....	26	36.0	18.7	11.1	6.8	4.8	8.2	Do.
Naivasha Plain	184036	Male....	170	102	29	40.1	21.4	12.8	7.8	4.3	8.9	Do.
Aberdare Mountains	184038	...do....	170	92	28	38.9	18.9	12.0	7.6	4.2	8.9	Do.
Do	184037	Female .	170	83	27	40.1	19.7	12.6	7.5	4.2	8.5	Do.
O. a. classodon.												
Laikipia	184002	Male....	170	.....	28	38.3	20.3	13.3	7.9	4.4	8.0	Teeth moderately worn.
Naivasha Station	162346	...do....	171	99	31	37.9	20.4	12.9	7.5	4.5	8.0	Do.
Do	162349	...do....	172	89	30	37.9	19.8	12.8	7.7	4.2	8.0	Do.
Do	162340	Female .	182	95	30	38.6	20.1	13.0	7.8	4.1	8.1	Do.
Do	162341	...do....	182	94	31	39.0	20.5	13.4	7.0	4.4	8.4	Do.
Do	162350	...do....	173	100	31	37.5	19.4	12.3	7.7	5.0	7.9	Do.
Do	162351	...do....	185	98	31	40.4	20.4	13.6	8.6	4.5	7.7	Do.
Mount Kilimanjaro	37374	Male....	.....	.....	.....	37.1	19.4	12.4	7.1	4.2	8.0	Do.
Do	37375	...do....	.....	.....	.....	38.7	19.7	13.1	8.8	4.5	8.2	Do.
O. n. canescens.												
Southern Guaso Nyiro	162330	Female .	169	89	28	35.8	18.8	12.6	8.0	4.4	8.5	Teeth considerably worn.
Engare Narok River	162337	...do....	162	97	28	35.7	19.0	12.3	8.1	4.4	8.5	Teeth moderately worn.
Engare Ndare River	184000	...do....	165	75	25	.....	.....	12.1	8.0	4.5	8.3	Do.
Njoro O Nyiro River	162327	Male....	175	83	29	36.4	19.5	12.6	8.4	4.4	8.4	Teeth considerably worn.
Ulukenia Hills	164327	...do....	161	.....	30	34.9	19.0	11.6	7.4	4.8	8.3	Teeth moderately worn.
Do	164328	Female .	164	81	28	33.9	18.0	11.5	7.7	4.4	7.6	Teeth little worn.

[1] Hind foot measurements taken by collectors and not always comparable one series with another.

[2] Type.

Family GRAPHIURIDÆ.

Genus GRAPHIURUS Smuts.

1832. *Graphiurus* Smuts, Enum. Mamm. Capensium, p. 32. (*G. capensis*=*G. ocularis.*)

Two distinct species-groups of dormice are found in the collections from eastern equatorial Africa, and are readily distinguishable by size of skull. The larger forms appear to be subspecies of the South African *Graphiurus murinus* and the smaller forms all closely resemble *Graphiurus parvus.*

GRAPHIURUS MURINUS GRISEUS Allen.

Plate 37.

1912. *Graphiurus microtis griseus* G. M. Allen, Bull. Mus. Comp. Zoöl., vol. 54, p. 440. April. (Northern Guaso Nyiro River, British East Africa; type in Mus. Comp. Zoöl. at Harvard.)

1912. *Graphiurus murinus johnstoni* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 2. July 5. (Mount Gargues, Mathews Range, British East Africa; type in U. S. Nat. Mus. Not *Graphiurus johnstoni* Thomas, 1897.)

Specimens.—Twelve, from localities as follows:

British East Africa: Burgunett River, Meru Road, 1 (Heller); Isiola River, 3 (Heller); Lesiweru River, Meru Road, 1 (Heller); Mount Gargues, 3 (Heller); Mount Lololokwi, 3 (Heller); Nyuki River, 1 in alcohol (Heller).

This form of *Graphiurus murinus* is very much like *G. m. saturatus*, but is grayer in color. The specimen from Lesiweru River is distinctly intermediate between *griseus* and *raptor;* it has the skull and large auditory bullæ of *griseus* with the color of the Kenia subspecies. Through the kindness of the authorities of the Museum of Comparative Zoölogy I have been able to borrow the type-specimen of *Graphiurus microtis griseus* Allen, and thus by actual comparison to prove the identity of this form with Heller's "*Graphiurus murinus johnstoni,*" the name of which was already preoccupied by the *Graphiurus johnstoni* of Thomas.

GRAPHIURUS MURINUS RAPTOR Dollman.

1910. *Graphiurus raptor* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 96. January. (West slope of Mount Kenia, British East Africa, at 11,000 feet; type in British Museum.)

1910. *Graphiurus raptor* Roosevelt, African Game Trails, Amer. ed. p. 472; London ed., p. 484.

1914. *Graphiurus* sp. Cockerell, Miller, and Printz, Zool. Anz., vol. 44, p. 435. June 23.

Specimens.—Twenty-nine, as follows:

British East Africa: West side of Mount Kenia at 8,500, 10,000 and 10,700 feet, 29, including 1 in alcohol (Loring, Mearns).

This high mountain subspecies is easily distinguished from the neighboring forms by its cinnamon gray coloration and small auditory

bullæ. Intergradation with *Graphiurus murinus griseus* is shown by specimens from Meru Road, listed under *griseus*, and doubtless takes place at various points on the lower slopes of the mountain.

GRAPHIURUS MURINUS SATURATUS Dollman.

1910. *Graphiurus microtis saturatus* Dollman, Ann. and Mag. Nat. Hist., ser. 8, vol. 5, p. 204. February. (South face of Mount Elgon, British East Africa, at 9,000 feet; type in British Museum.)

1910. *Graphiurus parvus* Roosevelt, African Game Trails, Amer. ed., pp. 472, 476; London ed., pp. 484, 488. (Part: reference to Sotik; not *Graphiurus parvus* of True.)

Specimens.—Forty-three, from localities as follows:

British East Africa: Engare Narok River, 1 (Loring); Kabalolot Hill, Sotik, 1 (Heller); Kaimosi, 21 (Heller); Kisumu, 1 (Heller); Lake Naivasha, south side, 1 (Mearns); Mount Kenia, west side at 7,000 feet, 1 (Heller); Naivasha Station, 10 (Loring); Nzoia River, Guas Ngishu Plateau, 1 (Heller); Oljoro O Nyon River, 2 (Heller, Loring); Southern Guaso Nyiro River, 4 (Loring).

This dark-colored subspecies of *murinus* has a wide range in western British East Africa. Specimens from the Southern Guaso Nyiro and Sotik seem indistinguishable from skins and skulls from Kaimosi and the Guas Ngishu Plateau. The specimen from the west side of Mount Kenia at 7,000 feet is in some respects peculiar and may represent another race, still undescribed. It has a skull decidedly larger than the average for *saturatus*, with wider rostrum and higher braincase. The coloration is hardly matched in the series of *saturatus* and is especially dark and rich on the underparts. The auditory bullæ are large. The specimen is clearly best referred to *saturatus*, rather than to *raptor* or *griseus*, and Dollman has already recorded *saturatus* from this vicinity. No specimen in our large series of *saturatus*, or indeed of any other East African form of *Graphiurus*, approaches it in the dimensions of the skull.

GRAPHIURUS MURINUS ISOLATUS Heller.

1892. *Eliomys murinus* True, Proc. U. S. Nat. Mus., vol. 15, p. 459. (Not of Desmarest.)

1912. *Graphiurus murinus isolatus* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 3. July 5. (Mount Umengo, Taita Mountains, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Nineteen, from localities as follows:

British East Africa: Mount Mbololo, 5 (Heller); Mount Umengo, 11, including 1 in alcohol (Heller).

German East Africa: Mount Kilimanjaro, 3 (Abbott).

This dark colored subspecies resembles *G. m. saturatus* externally, but the skull is easily separated from skulls of *saturatus* by the much smaller bullæ. On Mount Umengo Heller found three females pregnant as follows: November 11, two embryos; November 12, three embryos; November 13, four embryos. Doctor Abbott obtained the

Kilimanjaro specimens at an altitude of 5000 feet. The label of one of his female skins has written on it the following notes: "Taken, with the male, from a nest containing four young ones; nest globular, about 5 inches in diameter, with hole in side; situated in a bush 5 feet from ground. Nest made of grass and strips of banana fronds, lined with fine grass."

The four alcoholic specimens from Kilimanjaro listed by True in 1892 [1] can not now be found in the collection.

GRAPHIURUS PARVUS PARVUS (True).

Plate 37.

1893. *Eliomys parvus* TRUE, Proc. U. S. Nat. Mus., vol. 16, p. 601. October 25. (Tana River, between the coast and Hameye, British East Africa; type in U. S. Nat. Mus.)

1909. *Eliomys parvus* LYON AND OSGOOD, Bull. U. S. Nat. Mus., No. 62, p. 159. January 28.

Specimens.—Four, from the following localities:

BRITISH EAST AFRICA: Engare Ndare River, Northern Guaso Nyiro, 2 (Heller); Jambeni Mountains, 1 in alcohol, skull removed (Chanler); Tana River, 1 (Chanler and von Höhnel).

The dormouse described by Dollman [2] from Nyama Nyango, Northern Guaso Nyiro, as *Graphiurus brockmani internus*, seems likely to prove inseparable from *Graphiurus parvus parvus*.

GRAPHIURUS PARVUS DOLLMANI Osgood.

1910. *Graphiurus parvus dollmani* OSGOOD, Field Mus. Nat. Hist., Zool. ser., vol. 10, No. 3, p. 15. April 7. (Ulukenia Hills, British East Africa; type in Field Mus. Nat. Hist.)

Specimens.—Three, from localities as follows:

BRITISH EAST AFRICA: Mount Mbololo, 1 (Heller); Mount Sagalla, 2 (Heller).

These specimens have been compared with the type of *dollmani*, lent by the authorities of the Field Museum, and seen inseparable. The skulls of *dollmani* are larger than skulls of typical *parvus*. The Sagalla specimens, both females, are marked on the labels as caught in the mud nest of a swallow on the under side of a large rock, in roof of a cave; each contained four embryos, November 18.

GRAPHIURUS PERSONATUS Heller.

Plate 38.

1911. *Graphiurus personatus* HELLER, Smithsonian Misc. Coll., vol. 56, No. 17, p. 2. February 28. (Rhino Camp, Lado Enclave; type in U. S. Nat. Mus.)

Specimen.—One, the type, from—

LADO: Rhino Camp (Loring).

This dormouse is closely related to *G. parvus* and will doubtless prove to be only a geographical race of that older-named form.

[1] Proc. U. S. Nat. Mus., vol. 15, p. 459. 1892.

[2] Ann. and Mag. Nat. Hist., ser. 8, vol. 9, p. 318. March, 1912.

Measurements of adult specimens of Graphiurus.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry.	Skull: Condylobasal length.	Zygomatic breadth.	Mastoid breadth.	Interorbital breadth.	Upper tooth row.	Length of mandible.
G. m. griseus.											
Mount Lololokwi	182850	Female..	82	77	15.8	21.8	12.2	12.1	4.5	3.1	12.4
Mount Gargues	[1] 181787	Male....	92	80	16.8	25.3	14.4	12.9	4.6	3.3	13.3
Do	182848	...do....	90	76	15.5	23.6	14.5	12.9	4.3	3.0	13.9
Do	182849	Female..	88	74	15.8	23.3	14.0	12.7	4.3	3.1	13.3
Isiola River	182882	Male....	95	80	15.9	25.1	14.2	12.9	4.5	.....	13.7
Do	182883	Female..	80	72	15.6	21.8	12.8	12.4	4.4	3.1	12.4
Meru Road	182875	...do....	96	70	16.3	23.8	14.3	12.9	4.6	2.9	13.5
Northern Guaso Nyiro	[2] 8244	Male....	82	79	.....	24.8	14.7	12.9	4.6	3.3	13.0
G. m. raptor.											
Mount Kenia	164254	Male....	102	.....	17.3	24.2	14.4	12.5	4.6	3.3	14.2
Do	164260	...do....	89	77	16.8	24.1	14.4	12.7	4.4	3.2	13.9
Do	164267	...do....	103	78	17.4	24.8	14.5	13.3	4.8	3.3	13.9
Do	164272	...do....	101	89	16.0	24.7	14.2	12.4	4.6	3.3	14.5
Do	164274	...do....	104	79	17.4	24.6	15.3	13.2	4.5	3.3	13.9
Do	164253	Female..	96	74	16.7	23.7	14.3	12.4	4.5	3.1	13.4
Do	164257	...do....	95	80	16.4	24.2	14.1	12.6	4.5	3.0	13.9
Do	164258	...do....	96	78	16.9	24.0	13.7	12.5	4.5	3.0	13.7
Do	164268	...do....	86	74	16.6	22.7	13.1	12.1	4.7	3.2	13.3
G. m. saturatus.											
Kaimosi	182859	Male....	100	.....	16.6	24.7	15.1	12.6	4.5	3.4	14.1
Do	182862	...do....	100	80	17.2	24.9	14.7	12.8	4.2	3.3	13.8
Do	182863	...do....	92	.....	16.7	24.3	15.2	12.6	4.5	3.3	14.5
Do	182871	...do....	90	83	15.5	23.3	14.4	12.6	4.4	3.0	12.9
Do	182872	...do....	90	.....	16.2	23.3	13.8	12.9	4.6	3.0	13.4
Do	182866	Female..	92	.....	16.4	23.5	14.0	13.1	4.3	3.0	13.9
Do	182870	...do....	92	81	15.5	23.5	14.3	12.7	4.4	3.1	13.6
Nzoia River	164276	...do....	85	80	16.1	22.7	13.5	12.3	4.4	3.0	12.7
Naivasha	162244	Male....	94	74	15.8	24.8	14.4	12.7	4.7	3.0	14.2
Do	162243	Female..	95	.....	16.4	24.4	14.7	12.3	4.4	3.0	13.7
West side Kenia	164275	Male....	105	.....	17.3	25.9	15.8	13.3	5.3	3.4	14.6
Oljoro O Nyon	162226	...do....	95	84	16.3	24.5	14.7	12.7	4.5	3.4	14.3
Do	162228	Female..	82	.....	16.3	21.8	12.3	12.1	4.4	3.4	12.3
Engare Narok	162233	...do....	83	77	15.6	22.2	13.5	12.0	4.3	3.1	13.7
Southern Guaso Nyiro	162232	Male....	89	60	15.4	23.7	14.4	12.8	4.3	3.0	13.4
Do	162229	Female..	91	70	14.4	23.0	14.3	12.5	4.6	3.2	13.1
Do	162230	...do....	93	76	16.0	23.2	14.1	12.7	4.2	3.1	13.3
Do	162231	...do....	86	80	16.6	23.1	14.0	12.6	4.4	3.1	13.7
Kabalolot Hill	181734	...do....	95	.....	16.3	24.0	14.7	13.1	4.8	3.0	12.7
G. m. isolatus.											
Mount Mbololo	182836	Male....	100	.....	18.1	24.8	15.2	12.8	4.8	3.7	14.0
Do	182837	Female..	100	85	17.3	24.6	15.1	13.1	4.8	3.7	14.0
Do	182838	...do....	95	82	18.2	24.0	14.7	12.7	4.7	3.5	13.9
Mount Umengo	182841	Male....	100	.....	17.9	25.2	15.1	12.9	4.8	3.5	14.3
Do	182843	...do....	95	82	18.0	24.3	14.7	12.8	4.6	3.5	14.0
Do	182845	...do....	90	81	18.2	24.3	14.7	13.1	4.6	3.5	14.5
Do	[3] 181788	Female..	95	90	17.8	.....	15.3	.....	4.5	3.6	.....
Do	182839	...do....	92	88	18.3	24.5	14.5	12.4	4.8	3.6	13.8

[1] Type of *Graphiurus murinus johnstoni* Heller.

[2] Type of *Graphiurus microtis griseus* Allen; Mus. Comp. Zool. at Harvard.

[3] Type of *Graphiurus murinus isolatus* Heller; measurements of skull from original description, skull now lost.

Measurements of adult specimens Graphiurus—Continued.

Form and locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, dry.	Skull: Condylobasal length.	Zygomatic breadth.	Mastoid breadth.	Interorbital breadth.	Upper tooth row.	Length of mandible.
G. m. isolatus—Contd.											
Mount Umengo	182840	Female	92	82	17.4	23.3	14.3	12.5	4.8	3.6	13.8
Do	182846	...do	98	.....	17.7	25.1	15.5	12.9	4.8	3.4	14.7
Do	182847	...do	90	76	16.7	23.5	15.0	12.8	4.9	3.5	13.7
Mount Kilimanjaro	19729 35247	...do	98	.....	.....	25.5	15.2	12.6	4.5	3.3	15.0
G. p. parvus.											
Tana River	[1] 36056	Female	.....	.....	.....	21.0	13.0	11.5	3.7	2.7	11.2
Jambeni Mountains	62244	...do	.....	.....	13.9	20.4	12.4	11.4	3.8	2.7	11.4
Engare Ndare River	182877	...do	75	63	13.5	21.2	12.3	11.7	4.0	2.5	11.1
Do	182876	...do	80	75	13.9	21.4	12.7	11.6	3.9	2.5	12.2
G. p. dollmani.											
Ulukenia Hills	[2] 16722	...do	83	77	14.8	21.8	13.5	12.0	3.9	2.7	12.8
Mount Sagalla	182879	...do	85	80	14.8	22.6	13.3	11.8	4.0	2.8	13.0
Do	182880	...do	80	75	14.2	21.7	13.2	12.1	4.0	2.8	13.0
G. personatus.											
Rhino Camp, Lado	[1] 164867	...do	82	63	14.0	21.3	13.2	12.0	4.0	2.7	12.4

[1] Type. [2] Type; Field Mus. Nat. Hist., Chicago.

Family PEDETIDÆ.

Genus PEDETES Illiger.

1811. *Pedetes* Illiger, Prodr. Syst. Mamm. et Avium, p. 81. (*P. cafer.*)

The East African "jumping hare" is specifically distinct from *Pedetes cafer* of South Africa. The three well-marked forms known from British East Africa are local representatives of one species and all differ from *cafer* by having a very shallow depression in the anterior palatine region of the skull. The forms of this animal are doubtless very local in distribution. They are all very much alike externally, but are easily separated by the characters of the skull.

For measurements of specimens of *Pedetes* see page158.

PEDETES SURDASTER SURDASTER Thomas.

Plates 3, 4, 5.

1902. *Pedetes surdaster* Thomas, Ann. and Mag. Nat. Hist., ser. 7, vol. 9, p. 440, June. (Morendat, Naivasha Province, British East Africa; type in British Museum.)

1910. *Pedetes surdaster* Roosevelt, African Game Trails, Amer. ed., pp. 473, 479, 486; London ed., pp. 485, 490, 497. (Part; reference to Naivasha specimens.)

Specimens.—Fifty-three, including six odd skulls and seven fetuses, from:

British East Africa: Naivasha Station, 53 (Loring, Mearns, T. Roosevelt.)

The excellent series of 40 perfect skins and skulls of this form well illustrates the uniformity of specimens taken in one vicinity. The type locality of the species, Morendat, is given on the map prepared by the Public Works Department as about 10 miles west of Naivasha Station and these specimens are therefore virtual topotypes and possibly came from the actual type colony. All pregnant females contained a single fetus each.

Loring's interesting notes on this animal, from Appendix C, Roosevelt's African Game Trails, say:

> Very common at Naivasha station where their burrows were numerous on a sandy flat practically in the town, and many were taken within a hundred yards of the station. They are nocturnal, although one instance came under my observation where a springhaas was seen on a dark day to run from one bu row to another. By hunting them on dark nights with the aid of an acetylene light we were able to secure a good series of skins. When the light was flashed on them, their eyes shone like balls of fire the size of a penny, and it was not uncommon to see from two to five and six within the radius of the light at one time. They were usually flashed at a distance of about a hundred yards, and as the light drew near they would watch it, frequently bobbing up and down. Often they hopped away to right or to left, but very seldom did their fright carry them into their burrows unless a shot was fired; in fact even then we sometimes followed up one of their companions and secured it. Some allowed us to approach within 10 feet before moving, and then off they would go in great bounds, but I was never able in the dim light to see whether or not their tails aided them in jumping. I once shot a fox [*Otocyon*] from a cluster of eyes that I am positive were those of springhaas; this together with the fact that the stomachs of all the foxes killed contained termites and insects, leads me to believe that these two animals are more or less congenial. Doctor Mearns saw a springhaas sitting with its tail curled around to one side of its body, similar to the position often assumed by a house cat.

PEDETES SURDASTER CURRAX Hollister.

Plates 39, 40.

1918. *Pedetes surdaster currax* Hollister, Smithsonian Misc. Coll., vol. 68, No 10, p. 3. January 16. (Kabalolot Hill, Sotik, British East Africa; type in U. S. Nat Mus.)

Specimen.—One, the type—

British East Africa: Kabalolot Hill (Heller).

This is a pale form of *surdaster* with a long tail and with a greater mastoid development in the skull than is found in the other East African races of the "jumping hare." The single specimen was collected by the Rainey Expedition in 1911.

PEDETES SURDASTER LARVALIS Hollister.

Plates 3, 4, 5.

1910. *Pedetes surdaster* Roosevelt, African Game Trails, Amer. ed., p. 486; London ed., p. 497. (Part; reference to Ulukenia Hills.)

1918. *Pedetes surdaster larvalis* Hollister, Smithsonian M sc. Coll. vol. 68, No. 10, p. 2. January 16. (Ulukenia Hills, Athi Plains, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Six, from localities as follows:

British East Africa: Nairobi, 1 skull (Mearns); Ulukenia Hills, 5, including 2 fetuses (Loring).

Although skins of this race are only very slightly paler than skins of true *surdaster* from Naivasha, the skulls are readily distinguished by constant characters. A profile view of the skull presents an evenly rounded outline from the mastoids to the nasals; whereas in the Naivasha form the braincase is much higher and the depression in the frontals much lower so that the upper outline in profile presents a very uneven line, much raised posteriorly and with a decided depression over the lachrymal region. The rostral and orbital regions of the skull are much deeper in the Athi Plains form than in typical *surdaster* from Naivasha; and the suture between the frontals and parietals is almost straight across the skull with only a slight anteriorly rounded convexity, while in the large series of nearly 50 skulls of typical *surdaster* this suture presents a distinct and usually sharply pointed salient into the frontals.

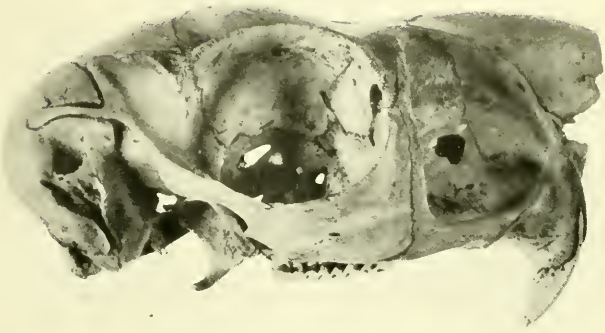
Measurements of East African specimens of Pedetes.

Locality.	No.	Sex.	Head and body.	Tail vertebræ.	Hind foot, with claws.	Skull: Condylobasal length.[1]	Zygomatic breadth.	Greatest breadth of nasals.	Height of skull in front of orbits.[2]	Mastoid breadth.	Upper tooth row, crowns.
P. s. surdaster.											
Naivasha Station	162178	Male	395	428	151	72.7	53.7	19.9	32.3	42.5	15.7
Do	162187	do	400	430	147	73.5	53.7	20.0	32.3	43.6	14.6
Do	162188	do	385	430	150	74.9	52.0	19.2	32.2	43.0	14.9
Do	162193	do	395	405	154	74.5	54.5	20.8	32.7	44.4	14.9
Do	162198	do	385	430	150	72.4	55.1	21.3	32.3	43.4	15.2
Do	162199	do	396	444	152	72.4	56.5	20.3	33.0	43.8	15.6
Do	162200	do	380	435	153	72.1	54.0	20.7	32.1	43.7	15.2
Do	162202	do	400	430	159	74.3	54.6	21.7	33.1	44.7	14.4
Do	162203	do	393	430	154	73.9	54.8	19.8	32.5	43.7	15.9
Do	162207	do	407	430	151	74.9	56.5	19.5	32.5	42.7	14.9
Do	162167	Female	390	420	145	72.3	52.8	19.7	31.2	43.2	14.9
Do	162169	do	395	425	155	73.3	55.0	20.3	31.7	42.5	15.3
Do	162170	do	390	400	152	73.1	55.9	19.3	30.5	41.9	15.8
Do	162175	do	382	405	149	70.4	54.0	20.0	31.1	42.2	15.6
Do	162182	do	390	425	153	73.5	56.8	19.9	31.4	43.5	15.8
Do	162190	do	400	.....	152	71.7	55.0	20.0	31.6	42.5	15.1
Do	162192	do	395	405	448	71.9	52.8	19.7	31.7	41.9	15.2
Do	162194	do	380	395	148	73.6	52.9	19.7	32.4	42.1	15.6
Do	162204	do	390	430	153	73.0	54.2	19.4	31.6	42.8	15.2
P. s. currax.											
Kabalolot Hill	[3] 181762	Male	400	480	157	75.3	55.7	19.0	33.6	46.1	15.9
P. s. larvalis.											
Ulukenia Hills	163303	Female	353	392	151	72.4	53.8	19.5	34.2	45.4	15.1
Do	[3] 163304	do	370	427	159	78.2	55.2	21.7	36.2	45.4	16.3
Do	163915	do	383	451	157	76.2	52.3	20.1	34.8	45.1	16.1

[1] Taken in this case to the most anterior point of premaxillary bone.

[2] From median anterior alveolar line to highest point on crown directly above lachrymal bone.

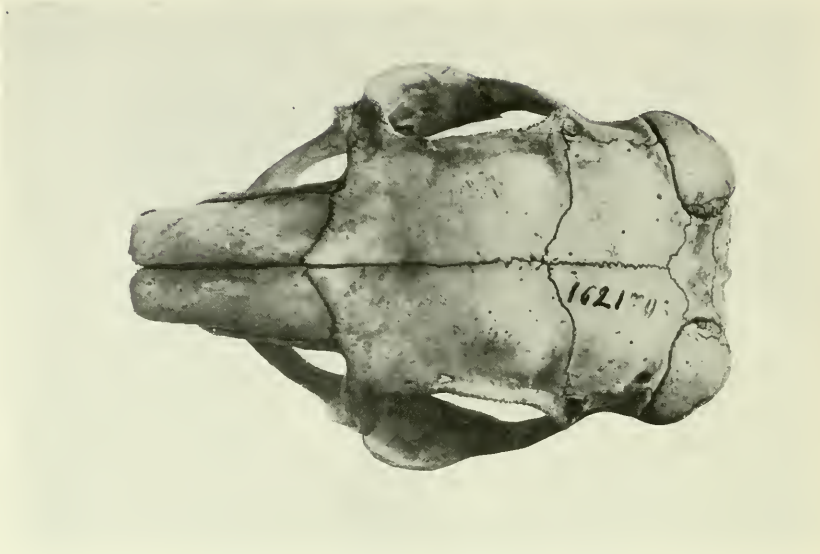
[3] Type.



PEDETES SURDASTER SURDASTER THOMAS.

PEDETES SURDASTER LARVALIS HOLLISTER. TYPE.

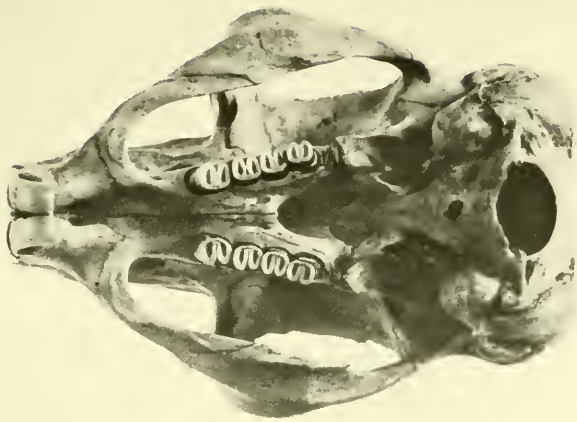
FOR EXPLANATION OF PLATE SEE PAGE 171.



PEDETES SURDASTER SURDASTER THOMAS.

PEDETES SURDASTER LARVALIS HOLLISTER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 171.



PEDETES SURDASTER SURDASTER THOMAS.

PEDETES SURDASTER LARVALIS HOLLISTER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 171.

Family BATHYERGIDÆ.

Genus HETEROCEPHALUS Rüppell.

1842. *Heterocephalus* RÜPPELL, Mus. Senckenberg, vol. 3, Heft 2, p. 99. (*H. glaber.*)

In addition to the species of the naked mole-rat known from Somaliland and Abyssinia, three forms have been described from British East Africa. These species or subspecies have been based on single specimens or very small series. After study of a suite of twelve specimens from one general region—the Northern Guaso Nyiro—I find that the characters used to separate these forms from *Heterocephalus glaber* are all accounted for by individual variation. Skulls of *Heterocephalus* are subject to a remarkable amount of variation. (See pls. 6 and 7) In the series of specimens mentioned the differences in size (usually accounted for by age); the variations in the form and position of the posterior border of the bony palate, in the shape, size, and relative position of the palatine foramina, and in the development of the coronoid process are great, and cover virtually all of the conditions described of the type-specimens of the named forms from British East Africa. Remarkable variations in relative size and shape of the molariform teeth are apparent in every specimen, and as great variation is present in width and bulk of the incisors. One skull in the collection, from Archer's Post on the Northern Guaso Nyiro, agrees almost to the slightest detail in every measurement but one with the type skull of *glaber* as described by Thomas.[1] The single case of discrepancy in size is in the breadth of palate inside m^2 and there is every reason to suspect that a mistake has been made in recording that measurement in Mr. Thomas's account. Without a suitable series of authentic skulls of *glaber* it will of course be impossible to settle the matter but it seems best to disregard the names applied to specimens from northern British East Africa until such actual comparison can be made. The type localities of the three names in question are sufficiently close together so that, considering the uniform conditions of local environment necessary to the life of the animal, it is reasonable to suspect that only one form is represented. Mr. Heller compared this series of skulls with the material in London and has noted on the label of one of the larger specimens (No. 184171) that it is identical with skulls of *glaber* from Somaliland; and on the label of one of the smaller skulls (No. 184176) that this specimen is identical with the type skull of *ansorgei*. Rüppell's figure of the type skull of *glaber* and the outline drawing of the same specimen published by Thomas in 1885[2] do not agree in essential details, and it is probably safest not to trust either for fine specific comparisons.

[1] Proc. Zool. Soc. London, 1885, p. 848. [2] Proc. Zool. Soc. London, 1885, pl. 54, fig. 5.

HETEROCEPHALUS GLABER Rüppell.

Plates 6, 7.

1842. *Heterocephalus glaber* Rüppell, Mus. Senckenberg, vol. 3, Heft 2, p. 99. (Schoa, Abyssinia; type in Senckenberg Museum, Frankfort.)

1903. *Heterocephalus ansorgei* Thomas, Proc. Zool. Soc. London, 1903, vol. 2, p. 336. (Between Ngomeni and Kenani, British East Africa; type in British Museum.)

1912. *Heterocephalus stygius* G. M. Allen, Bull. Mus. Comp. Zool., vol. 54, p. 444. April. (Neuman's Boma, Northern Guaso Nyiro, British East Africa; type in Mus. Comparative Zoölogy, Harvard University.)

1912. *Heterocephalus glaber progrediens* Lönnberg, Kungl. Sv. Vet. Akad. Handl., vol. 48, No. 5, p. 102. (Thornbush country north of Northern Guaso Nyiro, British East Africa; type in R. Nat. Hist. Mus., Stockholm.)

Specimens.—Thirteen, from localities as follows:

Italian Somali: Lugh, 1 in alcohol (Bottego).

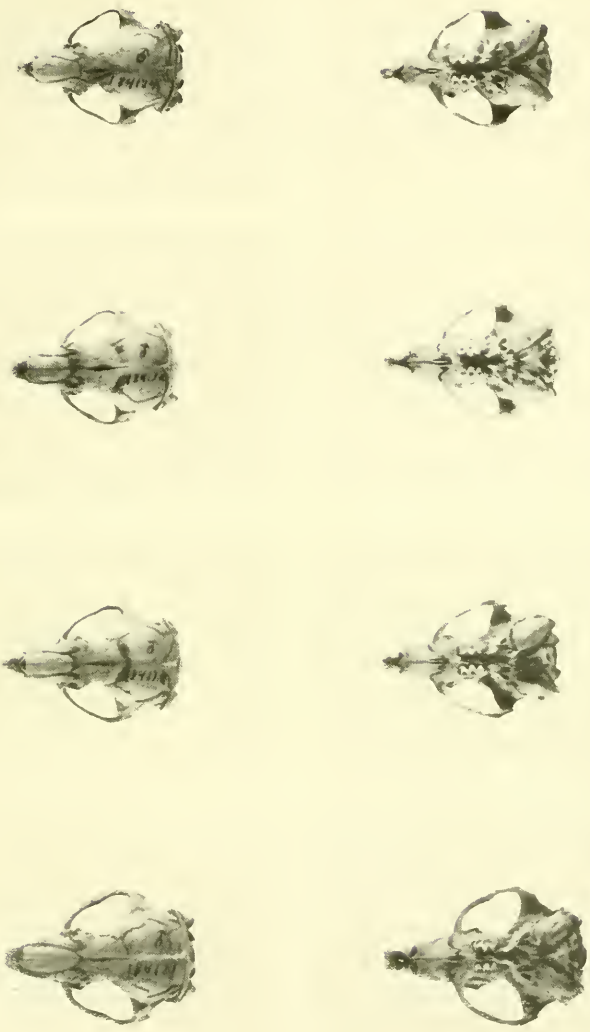
British East Africa: Archer's Post, 3 (Heller); Lakiundu River, 1 (Heller); Longaya Water, Marsabit Road, 1 (Heller); Merelle Water, Marsabit Road, 6, including 4 in alcohol (Heller); Northern Guaso Nyiro River, 30 miles east of falls, 1 (Percival).

In Heller's field journal of the Rainey Expedition I find the following interesting notes on naked rats:

Longaya Water: This morning near camp I saw several of the *Heterocephalus* throwing dirt out of their burrows. Little puffs of sand were coming out at intervals. The animal could not be seen and was apparently below the mouth of the burrow. This was about 8 a. m., and at 9 a. m. I again went out to snare some, but found them all quiet. They are apparently active only in the early morning. At sundown more were seen working. Went out at 9 p. m. with the headlight but found none at work where holes were numerous. Caught one during the night in a trap. Merelle Water: At 5 p. m. I saw several *Heterocephalus* throwing sand out of the burrows. I stood over one of the holes and watched. The animal pushed the dirt to the entrance with his head, then turned about and with his hind feet threw the dirt out, in a rapid puffy fashion, vertically, so that in falling it made a funnel-shaped pile about the hole. While he was thus throwing out the earth his tail could be seen wagging back and forth. Archer's post: As we were approaching camp I saw one of the naked mole rats throwing out sand in the bright sunshine. They seem [after all] to have no definite time for work.

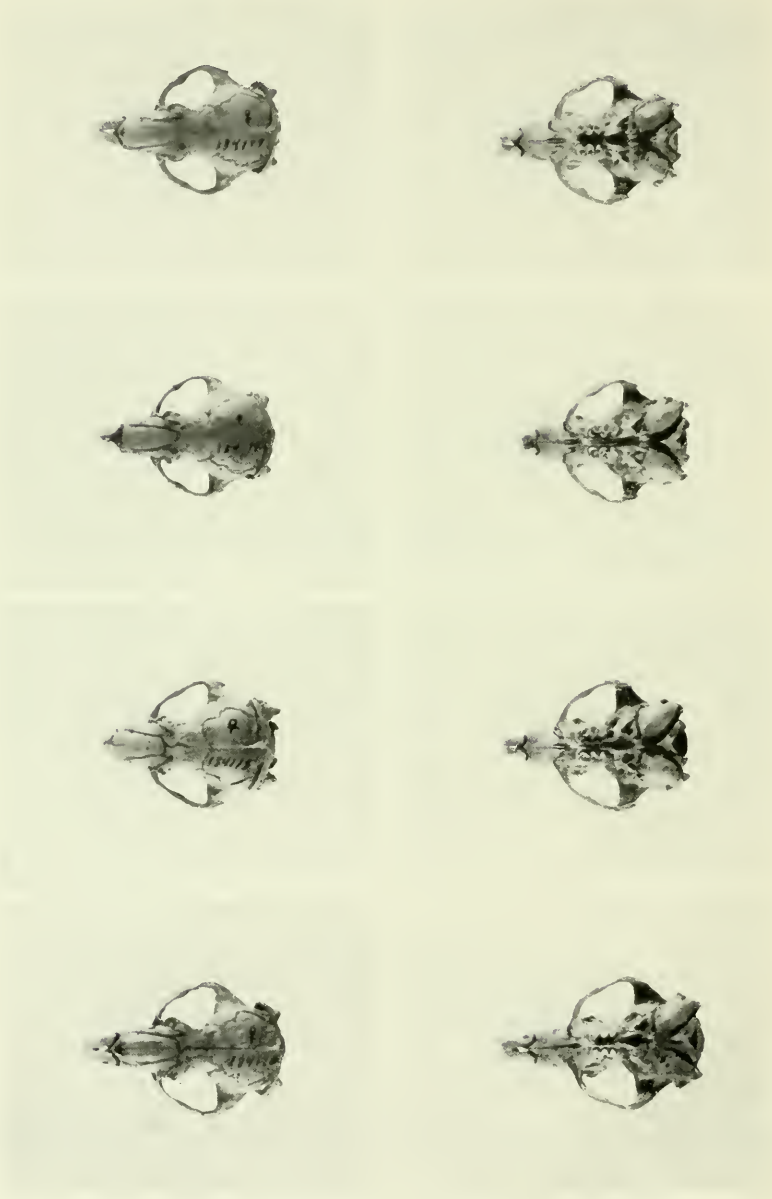
Measurements of specimens of Heterocephalus glaber from British East Africa.

Locality.	No.	Sex.	Head and body.	Tail.	Hind foot.	Skull: Occipitonasal length.	Condylobasal length.	Zygomatic breadth.	Mastoid breadth.	Upper tooth row, crowns.	Mandible.	Lower tooth row, crowns.
Archer's post.....	184171	Male....	108	46	21	21.5	24.2	18.2	13.1	3.3	20.4	3.4
Do.....	184172	...do....	98	46	21	20.2	22.4	15.7	12.5	3.2	18.4	3.6
Do.....	184177	Female .	100	47	21	19.9	22.4	17.2	12.7	3.5	18.8	4.0
North Guaso Nyiro.	184170	...do....	98	50	19	20.9	23.7	17.8	12.9	3.2	20.3	3.6
Lakiundu River...	184173	Male....	90	43	20	19.0	20.3	15.6	12.2	3.3	17.4	3.9
Longaya Water....	184174	...do....	95	43	19	18.9	21.2	16.0	12.6	3.3	17.4	3.7
Merelle Water.....	184175	Female .	105	50	22	20.3	22.7	17.4	12.5	3.2	19.4	3.6
Do.....	184176	...do....	95	50	21	19.4	21.5	16.2	11.9	3.4	18.2	3.9



SKULLS OF HETEROCEPHALUS GLABER, ADULT MALES.

FOR EXPLANATION OF PLATE SEE PAGE 171.



SKULLS OF HETEROCEPHALUS GLABER, ADULT FEMALES.

FOR EXPLANAT ION OF FLATE SEE FACE 171.

Genus HELIOPHOBIUS Peters.

1846. *Heliophobius* Peters, Mon.-ber. Akad. Berlin, 1846, p. 259. (*H. argenteo-cinereus.*)

1890. *Myoscalops* Thomas, Proc. Zool. Soc. London, p. 448. (To replace *Heliophobius* on supposition that it was preoccupied by *Heliophobus* Boisduval, 1829.)

The blesmols of this genus are in need of a careful systematic revision. For the present it seems best to use for our specimens the name proposed by Heller for the Kapiti Plains species. Although this name may be antedated by others, at present of doubtful status, it unquestionably applies to the form, and should not be replaced without due consideration.

HELIOPHOBIUS KAPITI (Heller).

Plate 38.

1909. *Georychus kapiti* Heller, Smithsonian Misc. Coll., vol. 54, part 4, p. 469. September 24. (Potha, Kapiti Plains, British East Africa; type in U. S. Nat. Mus.)

1910. *Myoscalops kapiti* Roosevelt, African Game Trails, Amer. ed., pp. 473, 479, 486; London ed., pp. 485, 490, 497.

Specimens.—Forty-three, from localities as follows:

British East Africa: Kapiti Plains, 8 (Loring); Kiambu, 1 (Loring); Loita Plains, 19 (Heller); Narosurra River, 2 (Turner); Southern Guaso Nyiro River, 3 (Loring); Telek River, 5 (Heller); Tsavo, 1 (Turner); Ulukenia Hills, 4 (Loring).

All of the specimens of *Heliophobius* from British East Africa in the United States National Museum collection appear to belong to a single form. The skin and skull from Tsavo are indistinguishable from specimens from Kapiti Plains and other localities and do not approach in any manner *Heliophobius spalax* [1] of Taveta. A single skin in the series (No. 181638 from Loita Plains) has a white nose; otherwise all are without abnormal markings of any kind.

The status of two forms of *Heliophobius* described from "East Africa" by Gray in 1864 [2] has never been settled. These were based on specimens collected by Speke, the types of which are in the British Museum. One, *H. albifrons*, has a large white frontal spot; the other, *H. pallidus*, is of a peculiar pale and possibly albinistic color.[3]

On the Loita Plains, May 26, Heller found female blesmols with two and three embryos each. The members of the Smithsonian African Expedition found numerous skulls of *Heliophobius* in owl pellets on the Kapiti Plains.

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[1] Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 315. September, 1910.

[2] Proc. Zool. Soc. London, 1864, pp. 123, 124.

[3] Thomas, Ann. and Mag. Nat. Hist., ser. 8, vol. 6, p. 316. September, 1910.

Family HYSTRICIDÆ.

Genus HYSTRIX Linnæus.

1758. *Hystrix* Linnæus, Syst. Nat., ed. 10, vol. 1, p. 56. (*H. cristata.*)

In addition to the porcupine from Lamu, British East Africa, included in our collection and listed below, the following forms have recently been described from eastern Equatorial Africa: *Hystrix galeata ambigua* Lönnberg,[1] Kibonoto, Kilimanjaro; *Hystrix africæ-australis prittwitzi* Müller,[2] Tabora, south of Victoria Nyanza, German East Africa; *Hystrix galeata conradsi* Müller,[3] Muansa, south shore of Victoria Nyanza, German East Africa; *Hystrix galeata lademanni* Müller,[3] Kondoa Irangi, German East Africa; *Hystrix galeata lönnbergi* Müller,[4] Mount Kilimanjaro; *Hystrix stegmanni* Müller,[5] Kissenji, northeast of Lake Kivu, German East Africa; and *Hystrix galeata somalensis* Lönnberg,[6] near Njoro, north of Northern Guaso Nyiro River, British East Africa. Dollman has recorded *Hystrix africæ-australis* Peters from the Amala River, southwestern British East Africa.[7]

HYSTRIX GALEATA Thomas.

1893. *Hystrix galeata* Thomas, Ann. and Mag. Nat. Hist., ser. 6, vol. 11, p. 230. March. (Lamu, British East Africa; type in British Museum.)

1910. *Hystrix galeata* Roosevelt, African Game Trails, Amer. ed., pp. 473, 479; London ed., pp. 485 491.

Specimens.—Three, from localities as follows:

British East Africa: Lake Naivasha, 2 (K. Roosevelt); Maji-ya-chumvi, 1 (Heller).

Some quills of the porcupine, picked up by Doctor Mearns at 6,500 feet on the west side of Mount Kenia, are also in the collection. The Maji-ya-chumvi specimen, which might be taken as representing true *galeata*, is young, with only two cheek teeth in place. One of the Naivasha specimens is somewhat older, with three cheek teeth, but with the premolar unchanged and with the basal suture open; while the other Naivasha skull shows the specimen to be an old, but not aged, individual. All are males. The skulls of these three animals are therefore not fairly comparable, but there is no reason to suspect that the Naivasha specimens might represent a separate race. Skins and quill markings of the two younger specimens are very much alike.

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[1] Sjostedts Kilimandjaro-Meru Exped., Mamm., p. 29. 1908.
[2] Sitz.-ber. Ges. nat. Freunde Berlin, 1910, p. 311.
[3] Sitz.-ber. Ges. nat. Freunde Berlin, 1910, p. 314.
[4] Sitz.-ber. Ges. nat. Freunde Berlin, 1910, p. 315.
[5] Archiv. für Naturgeseh., 1910, vol. 1, p. 186.
[6] Kungl. Svenska Vet. Handl., vol. 48, No. 5, p. 109. 1912.
[7] Proc. Zool. Soc. London, 1914, p. 317.

Family THRYONOMYIDÆ.

Genus THRYONOMYS Fitzinger.

1827. *Aulacodus* Temminck, Mon. Mamm. vol. 1, p. 245. (*T. swinderianus*. Not *Aulacodus* Eschscholtz, 1822.)
1867. *Thryonomys* Fitzinger, Sitz.-ber. Akad. Wien, vol. 56, p. 141. (*T. semipalmatus*.)
1896. *Triaulacodus* Lydekker, Geogr. Hist. Mamm. pp. 91, 240 (pro *Aulacodus* Temminck).

Representatives of both the large and small cane rats of this genus are included in the collection; but the material is altogether inadequate, and no opinion can be ventured on the relationships of the forms or on their systematic value.

THRYONOMYS SWINDERIANUS (Temminck).

1827. *Aulacodus swinderianus* Temminck Mon. Mamm., vol. 1, p. 248. (Africa; type in Leyden Museum.)
1892. *Aulacodus swinderianus* True, Proc. U. S. Nat. Mus., vol. 15, p. 468.

Specimen.—One skin and skull, as follows:

British East Africa: Taveta, 1 (Abbott).

The skull of this specimen, and old adult, basal suture obliterated, sex unknown, measures: Greatest length, 104 millimeters; condylobasal length, 91.2; zygomatic breadth, 70.3; greatest width of rostrum, 29.7; greatest width of nasals, 20.4; greatest length of nasals, 35.5; upper tooth row, crowns, 19.2.

THRYONOMYS PUSILLUS Heller.

Plate 41.

1912. *Thryonomys gregorianus pusillus* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 17. July 5. (Ndi, Taita Hills, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Seven, from localities as follows:

British East Africa: Maji-ya-chumvi, 5, including 3 embryos in alcohol (Heller); Ndi, 2, including 1 odd skull (Heller).

Females from Ndi, November 3, and Maji-ya-chumvi, December 12, each contained three embryos. A small specimen, about the size of a house rat, was captured at the latter place on December 10. Heller's field notes say that the species lives in grassy veldt, in holes; and on the edges of scrub thickets. Measurements of the type skull (young adult female with basal suture open) and of a similar female from Maji-ya-chumvi: Greatest length, 71.7, —; condylobasal length, 65.8, —; zygomatic breadth, 43.7, —; greatest width of rostrum, 17.3, 16.9; greatest width of nasals, 11.8, 11.9; greatest length of nasals, 23.6, 24.8; mandible, 50.3, 52.5; upper tooth row, crowns, 14.9, 14.2.

THRYONOMYS GREGORIANUS (Thomas).

1894. *Aulacodus gregorianus* THOMAS, Ann. and Mag. Nat. Hist., ser. 6, vol. 13 p. 202. February. (Luiji Reru River, Konu, Kikuyu British East Africa; type in British Mus.)

Specimen.—One skin and skull, as follows:

BRITISH EAST AFRICA: Kaimosi, 1 (Turner).

Mr. Turner has noted on the label that this specimen was captured on a grassy hill near Kaimosi, December 10, 1913.

Order LAGOMORPHA.

Family LEPORIDÆ.

Genus LEPUS Linnæus.

1758. *Lepus* LINNÆUS, Syst. Nat., ed. 10, vol. 1, p. 57. (*L. timidus.*)

The East African hares are readily separated into several well-marked forms. In no case does our material show two forms occupying the same territory and it would seem probable that complete collections will prove that all the British East African hares, with the exception of *L. raineyi*, are races of some earlier named species, probably of *Lepus capensis.*

LEPUS ISABELLINUS Cretzschmar.

1828. *Lepus isabellinus* CRETZSCHMAR, Atlas Reise nörd. Afrika von Eduard Rüppell, p. 52. (Desert southwest from Ambukol, Sudan; type in Frankfort Museum.)

1905. *Lepus isabellinus* SCHWANN, Novit. Zool., vol. 12, p. 5. January.

Specimens.—Two, from—

SUDAN: Naikhala (Rothschild).

LEPUS TIGRENSIS Blanford.

1869. *Lepus tigrensis* BLANFORD, Ann. and Mag. Nat. Hist., ser. 4, vol. 4, p. 330. November. (Takonda and Adabagi, Abyssinia; "types in British Museum.")[1]

Specimens.—Two, from—

ERITREA: Agordat (received from W. F. H. Rosenberg).

LEPUS RAINEYI Heller.

Plate 42.

1912. *Lepus raineyi* HELLER, Smithsonian Misc. Coll., vol. 59, No. 16, p. 18. July 5. (Longaya Water, 30 miles south of Mount Marsabit, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Eight, from localities as follows:

BRITISH EAST AFRICA: Kara Water, Marsabit Road, 1 (Heller); Lakiundu River, 3 (Heller); Longaya Water, Marsabit Road, 1 (Heller); Marsabit Road, 1 (Heller); Mount Lololokwi, 1 (Heller); Quoy Water, Marsabit Road, 1 (Heller).

[1] Blanford, Observations on the Geology and Zoology of Abyssinia, p. 276. London, 1870.

This long-eared, buff and black hare, with a distinct grayish rump patch, is readily distinguishable from the hares of the *capensis-victoriæ* group. It is confined to the region north of Mount Kenia, where it is known from the southern side of the Northern Guaso Nyiro River northward to Mount Marsabit. Heller found single embryos in females from Lakiundu River, July 10, and Longaya Water, July 21.

Heller reports this hare as abundant in the open sandy desert country about Marsabit. He says it relies upon its pale coloration, rather than cover, for protection, differing in this respect from the hares of the highlands of British East Africa to the southward.

LEPUS CAPENSIS ABBOTTI Hollister.

Plate 43.

1892. ?*Lepus capensis* True, Proc. U. S. Nat. Mus., vol. 15, p. 468. (Not of Linnæus.)

1918. *Lepus capensis abbotti* Hollister, Proc. Biol. Soc. Washington, vol. 31, p. 35. May 16. (Plains east of Mount Kilimanjaro, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Three, from localities as follows:

British East Africa: Maji-ya-chumvi, 1 (Heller); plains east of Mount Kilimanjaro, 1 (Abbott); Useri River, 1 (Abbott).

This subspecies of the Cape hare more nearly resembles the typical form of South Africa than do some of the intermediate races. It is closely related to *Lepus capensis crawshayi*, but can be distinguished in fresh pelage by the more ochraceous tone of the buff hair rings above; more ochraceous, less blackish, shoulders and sides of neck; deeper ochraceous nape-patch, throat-patch, sides, and limbs; and browner ears. The young example from Maji-ya-chumvi, in juvenile coat, is decidedly darker (more ochraceous, less gray) than young of *crawshayi* in corresponding pelage, and has a much deeper colored nape and throat.

LEPUS CAPENSIS CRAWSHAYI de Winton.

1899. *Lepus crawshayi* de Winton, Proc. Zool. Soc. London, p. 416. (Neugia Kitwi,[1] British East Africa; type in British Museum.)

1910. *Lepus victoriæ* Roosevelt, African Game Trails, Amer. ed., pp. 473, 479; London ed., pp. 485, 491. (Part.)

1918. *Lepus capensis crawshayi* Hollister, Proc. Biol. Soc. Washington, vol. 31, p. 35. May 16.

Specimens.—Twenty-eight, from localities as follows:

British East Africa: Juja Farm, 1 (Mearns); Kapiti Plains, 7 (Mearns, Loring); Naivasha Station, 1 (Loring); Omboni River, 1 (Heller); Plains west of Mount Kenia, 8, including 1 in alcohol (Loring, Mearns); Sir Alfred Pease's Farm, 1 (Mearns); Ulukenia Hills, 9, including 2 in alcohol and 2 odd skulls (Loring, Mearns).

[1] East of the Athi River and northeast of Machakos.

Measurements of specimens of Lepus.

Form and locality.	No.	Sex.	Head and body.	Tail.	Hind foot.	Ear from notch, dry.	Skull: Occipitonasal length.	Condylobasal length.	Zygomatic breadth.	Interorbital constriction.	Postorbital constriction.	Breadth of brain-case.	Length of nasals (diagonal).	Greatest breadth of nasals.	Maxillary tooth row, alveoli.	Mandibular tooth row, alveoli.
L. isabellinus.																
Sudan:																
Naikhala	141512	Male	425	90	102	110										
Do	141511	Female	420	90	100	99										
L. tigrensis.																
Eritrea:																
Agordat	122538					122	85.8	75.8	38.2	17.7	11.3	27.8	36.0	18.2	15.3	15.5
Do	122539					112	81.0	72.4		17.4	11.2	27.1	34.7	19.6	14.8	15.7
L. raineyi.																
B. E. A.:																
Marsabit Road	182746	Female	460	98	115	113	88.2	79.5	39.9	15.4	12.3	29.0	36.6	19.6	15.8	15.8
Longaya Water	[1] 181808	...do	480	95	105	114	87.0	77.8	41.8	18.7	10.5	28.9	36.7	19.4	15.2	15.4
Kara Water	182745	...do	470	134	115	107	87.0	79.2	39.8	19.3	12.3	29.6	37.7	20.9	15.4	16.4
Quoy Water	182747	...do	460	103	110	108	87.0	77.9	41.6	19.3	14.1	28.8	37.8	21.8	15.3	16.3
Lakiundu River	182742	Male	450	100	105	113	86.1	75.8	39.3	16.1	13.0	28.3	36.8	20.0	15.1	15.8
Do	182744	...do	450	106	108	111	82.7	75.0	39.2	15.3	10.9	28.1	36.2	19.3	13.7	14.8
Do	182743	Female	460	80	105	97	85.8	76.4	39.2	17.8	12.9	28.3	36.8	19.9	15.1	15.6
L. c. abbotti.																
Kilimanjaro Plains	19013	Male				84	86.2	77.3	39.3	18.3	13.0	27.2	38.8	19.7	15.2	16.3
Do	[1] 19014	Female				82	87.5	76.9	40.5	15.9	10.3	28.7	38.8	19.7	15.3	16.1
L. c. crawshayi.																
B. E. A.:																
Mount Kenia	163668	Male	425	112	119	88	81.3	73.2	39.9	16.3	12.7	28.8	33.7	19.0	14.1	15.0
Do	163669	...do	435	95	103	86	80.5	71.3	38.2	15.3	12.9	27.8	34.0	18.5	14.3	15.1
Do	163672	...do	411	91	110	87	82.2	73.7	40.5	17.1	11.2	30.0	34.3	19.3	14.8	15.3

Do	163673	...do...	451	73	113	88	87.0	78.0	41.4	17.5	12.6	30.0	35.4	18.7	14.7	15.6
Do	163671	Female.	426	89	116	93	84.8	75.0	40.2	17.5	11.5	28.5	36.2	20.2	14.0	15.4
Ombom River	163667	...do...	450	105	118	88	83.0	72.0	39.9	15.5	11.5	28.7	34.7	17.5	14.2	14.8
Naivasha	162160	...do...	455	105	114	94	.....	.....	40.9	16.8	12.3	.....	35.3	17.8	15.0	15.8
Juja Farm	161703	Male...	460	95	117	91	81.8	75.0	39.0	17.8	11.2	28.3	35.3	18.5	13.9	14.9
Ulukenia Hills	163662	...do...	420	91	115	85	83.8	75.2	40.1	21.1	12.7	28.5	34.7	20.7	15.2	16.1
Do	163666	...do...	442	82	109	86	81.3	72.9	39.9	16.0	12.7	30.3	34.6	20.3	14.8	16.3
Do	163663	Female.	424	95	110	98	81.6	73.8	39.8	14.8	12.2	29.0	33.1	18.4	15.0	15.8
Do	163665	...do...	423	102	111	89	84.6	75.2	40.3	17.4	11.8	28.6	35.2	18.8	15.2	16.7
Kitanga	161702	...do...	435	102	114	85	86.3	76.0	37.7	18.3	9.9	28.4	37.9	19.8	14.9	16.7
Kapiti Plains	162158	Male...	.....	.....	.....	93	82.0	75.2	39.9	17.6	12.7	28.5	34.7	18.5	14.4	15.0
Do	162159	...do...	.....	.....	.....	99	78.7	72.9	39.7	15.2	11.3	28.4	31.8	17.3	14.0	14.6
Do	162150	Female.	.....	.....	.....	98	81.8	75.0	38.5	15.8	10.8	27.4	33.5	17.5	14.0	15.3
Do	162151	...do...	.....	.....	.....	95	82.3	73.8	41.2	15.5	11.1	29.2	33.9	18.1	14.7	15.2
Do	162157	...do...	470	92	112	92	87.1	78.3	39.4	15.9	11.2	29.2	35.8	18.0	15.3	16.3
L. v. victoriæ.																
B. E. A.:																
Telek River	181766	Male...	580	70	110	86	86.5	.....	42.9	19.4	12.8	30.5	38.0	20.0	15.6	17.0
Southern Guaso Nyiro	162156	...do...	455	105	116	92	.....	75.1	39.9	17.4	11.9	28.0	36.7	.....	14.4	15.3
Do	162161	...do...	500	114	120	100	85.5	77.0	40.9	15.0	11.7	28.8	36.7	18.9	15.2	16.2
Do	162153	Female.	449	106	120	94	88.1	78.8	43.0	16.6	14.1	30.2	40.4	18.7	15.3	15.8
Do	162154	...do...	428	90	112	96	84.0	75.9	42.0	16.2	12.8	29.8	33.1	18.1	15.2	15.5
Do	162155	...do...	453	101	124	92	.....	73.2	40.4	17.0	12.4	29.2	.....	19.1	14.7	16.0
Do	162162	...do...	465	130	122	94	78.6	71.6	38.8	16.0	12.2	27.9	33.0	16.2	13.7	15.1
Do	162163	...do...	520	135	120	94	93.2	83.0	42.9	18.8	12.0	30.7	41.2	21.8	16.8	17.2
L. v. kakumegæ.																
B. E. A.:																
Lukosa River	[1] 181809	Female.	460	110	105	78	89.5	80.0	41.1	19.0	11.5	29.1	39.2	18.7	15.5	17.0
Sirgoit Lake	163661	...do...	490	95	115	83	88.7	79.4	39.3	16.2	12.1	29.2	39.0	17.8	16.2	16.8
L. microtis.																
Uganda: Ledgus	164841	.....	.....	.....	.....	81	86.8	76.0	38.5	18.1	12.0	26.9	39.3	20.4	16.2	17.3

[1] Type

Mearns notes one small fetus in a female collected at Sir Alfred Pease's Farm, May 9.

In full, fresh pelage this is a richly colored hare, much darker than *raineyi* or *victoriæ*, and less rufous or ochraceous than *abbotti* or *kakumegæ*. Only a few skins are in the best pelage, the majority of the specimens showing considerably the effects of wear and fading. Specimens in juvenile coat are pale brownish gray, but those in the post-juvenile pelage are darker than many adults. As with most hares, these latter may be distinguished from the adults by the peculiar fine streaking of the post-juvenile coat. Some adults, in old pelage but not yet showing much wear, are very gray in color, differing markedly from the darker, fresh-coated animals. There is great uniformity in the skulls throughout the entire series, and I do not detect any subspecific differences between skins from the extremes of distribution for the race. No evidences of direct intergradation with *L. victoriæ* or with *L. raineyi* are to be found from our material. Contrary to the general opinion, I do not think that the ranges of these species overlap, and I would not be surprised if *victoriæ* eventually proved to be a subspecies of *Lepus capensis*, grading into *crawshayi* or *abbotti*.

LEPUS VICTORIÆ VICTORIÆ Thomas.

1893. *Lepus victoriæ* Thomas, Ann. and Mag. Nat. Hist., ser. 6, vol. 12, p. 268. October. (Nassa, Speke Gulf, Victoria Nyanza, German East Africa; type in British Museum.)

1910. *Lepus victoriæ* Roosevelt, African Game Trails, Amer. ed., pp. 473, 479; London ed., pp. 485, 491. (Part.)

Specimens.—Fourteen, from localities as follows:

British East Africa: Deep Dale, Sotik, 1 (Heller); Kabalolot Hill, 2 (Heller); Oljoro O Nyon River, 1 (Loring); Southern Guaso Nyiro River, 9, including 1 odd skull (Loring, Mearns, Heller); Telek River, Sotik, 1 (Heller).

This is a distinctly larger hare than *Lepus capensis crawshayi*. It does not, so far as our material shows, range east of the Rift Valley. I suspect that it is a subspecies of *Lepus capensis* and that intergrading specimens will be found between it and *crawshayi* or *abbotti*. The characters of the incisor teeth, commonly used to distinguish *victoriæ* from *crawshayi*,[1] are average only, and are not to be relied upon in every case. Compared with *Lepus capensis crawshayi*, the Victoria hare is a much less brightly colored animal, less gray or less blackish according to the condition of the pelage. Our specimens are a very uniformly colored lot, but there is considerable variation in

[1] See de Winton, Proc. Zool. Soc. London, 1889, pp. 416, 417; Lönnberg, Kungl. Sv. Vet. Akad. Handl. vol. 48, No. 5, p. 111. 1912.

size of the skull. As usual in the genus the largest specimens are old females.

LEPUS VICTORIÆ KAKUMEGÆ Heller.

Plate 44

1910. *Lepus victoriæ* Roosevelt, African Game Trails, Amer. ed., pp. 473, 479; London ed., pp. 485, 491. (Part.)

1912. *Lepus kakumegæ* Heller, Smithsonian Misc. Coll., vol. 59, No. 16, p. 19. July 5. (Lukosa River, Kakumega Forest, British East Africa; type in U. S. Nat. Mus.)

Specimens.—Four, from localities as follows:

British East Africa: Guas Ngishu Plateau, 1 odd skull (Heller); Lukosa River, 1 (Heller); Sirgoit Lake, 2, including 1 odd skull (Heller).

A dark, or rather more richly colored race of *Lepus victoriæ*, with much shorter ears. The Sirgoit Lake skin is somewhat intermediate between this form and typical *victoriæ*, but clearly goes best with *kakumegæ*. This is probably a connectant subspecies between *victoriæ* and *microtis*. Hares from Uganda and the upper Nile are greatly needed in collections.

LEPUS MICROTIS Heuglin.

1865. *Lepus microtis* Heuglin, Nov. Act. Acad. Caes. Leop., vol. 32, pt. 1, p. 32. (Lat. 6°–8° N., long. 29°–31° E., Bahr-el-Gazal, Sudan.)

Specimen.—One head with skull from—

Uganda: Lagos, near Ledgus, 1 (Loring).

The status of *Lepus microtis* Heuglin has never been determined, but there seems little reason to suspect that it represents anything except the short-eared forest hare of the upper Nile, which doubtless intergrades through *kakumegæ* into *Lepus victoriæ*. The single specimen in the collection, imperfect as it is, helps little to settle the question except that it proves the presence of a hare of this type in extreme northwestern Uganda. The Ledgus specimen may not represent typical *microtis*, but the form represented will doubtless prove nearer to that subspecies than to the obviously related *Lepus victoriæ kakumegæ*.

Order TUBULIDENTATA.

Family ORYCTEROPIDÆ.

Genus ORYCTEROPUS Geoffroy.

1796. *Orycteropus* Geoffroy, Mag. Encycl., vol. 2, p. 290. (*O. afer.*)

The aard-vark is rarely collected by East African travelers, and no specimens were brought home by either of the larger expeditions.

ORYCTEROPUS ÆTHIOPICUS Sundevall.

1843. *Orycteropus æthiopicus* Sundevall, Kongl. Vet.-Akad. Handl., 1842, p. 236. (Sennar, Sudan.)

Specimen.—One skin and skull, as follows:

Abyssinia: Adis Ababa, 1 (Philip).

The skull of this specimen measures: Total length, 213; condylobasal length, 213; zygomatic breadth, 79; median length of nasals, 88.4; greatest breadth of nasals, 44; interorbital breadth, 57.4; postorbital constriction, 43.7; palatal length, 132; length of mandible, 186; entire upper tooth row, 65.8; entire lower tooth row, 42.2.

EXPLANATION OF PLATES.

The skulls illustrated in these plates were all photographed natural size. The scale as given is in most cases correct, but allowance should be made for very slight variations from the size of the actual specimens which sometimes exist in plates made by the photographic process.

Plate 1.

Map of Eastern Equatorial Africa.

Plate 2.

East African maned rat (*Lophiomys ibeanus*) photographed from living specimen in the National Zoological Park. (From Baker, Smithsonian Misc. Coll., vol. 59, No. 9, pl. 1, 1912.) Much reduced.

Plate 3.

Skulls of *Pedetes*, lateral view, natural size.

Upper figure. *Pedetes surdaster surdaster*. Adult female; Cat. No. 162170; Naivasha Station, British East Africa.

Lower figure. *Pedetes surdaster larvalis*. Adult female; Cat. No. 163304; Ulukenia Hills, British East Africa. Type-specimen.

Plate 4.

Skulls of *Pedetes*, dorsal view, natural size.

Upper figure. *Pedetes surdaster surdaster*. Adult female; Cat. No. 162170; Naivasha Station, British East Africa.

Lower figure. *Pedetes surdaster larvalis*. Adult female; Cat. No. 163304; Ulukenia Hills, British East Africa. Type-specimen.

Plate 5.

Skulls of *Pedetes*, ventral view, natural size.

Upper figure. *Pedetes surdaster surdaster*. Adult female; Cat. No. 162170; Naivasha Station, British East Africa.

Lower figure. *Pedetes surdaster larvalis*. Adult female; Cat. No. 163304; Ulukenia Hills, British East Africa. Type-specimen.

Plate 6.

Skulls of *Heterocephalus glaber*, adult males, from north of Mount Kenia; dorsal and ventral views, natural size.

Cat. No. 184174. Longaya Water.
Cat. No. 184173. Lakiundu River.
Cat. No. 184172. Archer's Post.
Cat. No. 184171. Archer's Post.

Plate 7.

Skulls of *Heterocephalus glaber*, adult females, from north of Mount Kenia; dorsal and ventral views, natural size.

Cat. No. 184177. Archer's Post.
Cat. No. 184176. Merelle Water.
Cat. No. 184175. Merelle Water.
Cat. No. 184170. Northern Guaso Nyiro.

PLATE 8.

Skull of type-specimen of *Sciurus undulatus* True. adult male; Cat. No. 19005. Natural size. (=*Heliosciurus undulatus undulatus.*)

PLATE 9.

Skull of type-specimen of *Heliosciurus rufobrachiatus shindi* Heller. Adult male; Cat. No. 182768. Natural size. (=*Heliosciurus undulatus shindi.*)

PLATE 10.

Skulls of type-specimens (natural size).

Left. *Heliosciurus multicolor madogæ* Heller. Adult male; Cat. No. 164828.
Right. *Paraxerus kahari* HELLER. Adult female; Cat. No. 164203. (=*Paraxerus ochraceus kahari.*)

PLATE 11.

Skull of type-specimen of *Protoxerus stangeri bea* Heller. Adult male; Cat. No. 181786. Natural size.

PLATE 12.

Skulls of type-specimens (natural size).

Left. *Tatera varia* Heller. Adult male; Cat. No. 162249. (=*Tatera böhmi varia.*)
Right. *Tatera pothæ* Heller. Adult female; Cat. No. 161716. (=*Tatera vicina pothæ.*)
(From Smithsonian Misc. Coll., vol. 56, No. 9, pl. 1. 1910.)

PLATE 13.

Skull of type-specimen of *Tatera nigricauda percivali* Heller. Adult female; Cat. No. 183945. Natural size.

PLATE 14.

Skull of type-specimen of *Lophiomys thomasi* Heller. Adult male; Cat. No. 181789. Natural size.

PLATE 15.

Skull of type-specimen of *Tachyoryctes rex* Heller. Adult male; Cat. No. 163088. Natural size. (From Smithsonian Misc. Coll., vol. 56, No. 9, pl. 3. 1910.)

PLATE 16.

Skulls of type-specimens (natural size).

Upper figures. *Dendromus mesomelas percivali* Heller. Adult female; Cat. No. 181791. (=*Dendromus insignis percivali.*)
Middle figures. *Dendromus whytei capitis* Heller. Adult female; Cat. No. 181792.
Lower figures. *Dendromus lineatus* Heller. Adult male; Cat. No. 164816.

PLATE 17.

Skulls of type-specimens (natural size).

Upper figures. *Dendromus nigrifrons* True. Adult female; Cat. No. 35263.
Middle figures. *Dendromus spectabilis* Heller. Adult female; Cat. No. 164815. (=*Dendromus nigrifrons spectabilis.*)
Lower figures. *Steatomys athi* Heller. Adult female; Cat. No. 162883.

PLATE 18.

Skulls of type-specimens (natural size).

Left. *Zelotomys hildegardeæ vinaceus* Heller. Adult female; Cat. No. 181798.
Right. *Thamnomys dolichurus littoralis* Heller. Adult male; Cat. No. 181799. (=*Thamnomys surdaster littoralis.*)

PLATE 19.

Skulls of type-specimens (natural size).

Left. *Œnomys hypoxanthus vallicola* Heller. Adult female; Cat. No. 162614. (=*Œnomys bacchante vallicola.*)

Right. *Epimys kaiseri centralis* Heller. Adult male; Cat. No. 165035. (=*Rattus kaiseri helleri* Hollister.)

PLATE 20.

Skulls of type-specimens (natural size).

Left. *Thamnomys loringi* Heller. Adult female; Cat. No. 161904. (=*Rattus nigricauda loringi.*)

Right. *Mus peromyscus* Heller. Adult male; Cat. No. 161905. (=*Rattus tullbergi peromyscus.*)

(From Smithsonian Misc. Coll., vol. 52, part 4, pl. 56. 1909.)

PLATE 21.

Skulls of type-specimens (natural size).

Upper figures. *Epimys kaiseri turneri* Heller. Adult female; Cat. No. 183395. (=*Rattus kaiseri turneri.*)

Middle figures. *Epimys endorobæ* Heller. Adult male; Cat. No. 162888. (=*Rattus denniæ.*)

Lower figures. *Epimys taitæ* Heller. Adult male; Cat. No. 181797. (=*Rattus taitæ.*)

PLATE 22.

Skulls of type-specimens (natural size).

Upper figures. *Epimys alleni kaimosæ* Heller. Adult female; Cat. No. 181794. (=*Rattus stella kaimosæ.*)

Middle figures. *Epimys niveiventris ulæ* Heller. Adult female; Cat. No. 162887. (=*Rattus fumatus fumatus.*)

Lower figures. *Mus tana* True. Adult female; Cat. No. 36055. (=*Rattus tana.*)

PLATE 23.

Skulls of type-specimens (natural size).

Upper figures. *Epimys coucha ismailiæ* Heller. Adult male; Cat. No. 165108. (=*Rattus coucha ismailiæ.*)

Middle figures. *Rattus coucha tinctus* Hollister. Adult male; Cat. No. 183294.

Lower figures. *Epimys coucha neumani* Heller. Adult male; Cat. No. 181795. (=*Rattus coucha neumani.*)

PLATE 24.

Skulls of type-specimens (natural size).

Upper figures. *Leggada naivashæ* Heller. Adult male; Cat. No. 162885. (=*Mus triton triton.*)

Middle figures. *Epimys panya* Heller. Adult male; Cat. No. 161886. (=*Rattus coucha panya.*)

Lower figures. *Epimys coucha durumæ* Heller. Adult male; Cat. No. 181796. (=*Rattus coucha durumæ.*)

PLATE 25.

Skulls of type-specimens (natural size.)

Mus musculoides emesi Heller. Adult male; Cat. No. 164819. (=*Mus emesi.*)

Mus bellus enclavæ Heller. Adult male; Cat. No. 164818.

Mus bellus gondokoræ Heller. Adult male; Cat. No. 164820.

Mus bellus petilus Hollister. Adult male; Cat. No. 162397.

PLATE 26.

Skulls of type-specimens (natural size).

Mus gratus sungaræ Heller. Adult male; Cat. No. 163487. (=*Mus gratus gratus.*)
Mus gratus soricoides Heller. Adult male; Cat. No. 183544.
Mus tenellus acholi Heller. Adult male; Cat. No. 164817.
Mus wamæ Heller. Adult male; Cat. No. 161777.

PLATE 27.

Skull of type-specimen of *Cricetomys gambianus raineyi* Heller.
Adult male; Cat. No. 181804. Natural size.

PLATE 28.

Skull of type-specimen of *Cricetomys gambianus enguvi* Heller.
Adult female; Cat. No. 181805.

PLATE 29.

Skull of type-specimen of *Cricetomys gambianus osgoodi* Heller.
Adult male; Cat. No. 181806.

PLATE 30.

Skulls of type-specimens (natural size).

Upper figures. *Mus aquilus* True. Adult male; Cat. No. 34723. (=*Lophuromys aquilus.*)
Middle figures. *Lophuromys pyrrhus* Heller. Adult male; Cat. No. 164823. (=*Lophuromys ansorgei pyrrhus.*)
Lower figures. *Lophuromys aquilus margarettæ* Heller. Adult male; Cat. No. 181793.

PLATE 31.

Skulls of type-specimens (natural size).

Upper figures. *Acomys hystrella* Heller. Adult female; Cat. No. 164821.
Middle figures. *Uranomys ugandæ* Heller. Adult male; Cat. No. 164822.
Lower figures. *Saccostomus isiolæ* Heller. Adult female; Cat. No. 181803.

PLATE 32.

Skulls of type-specimens (natural size).

Left. *Saccostomus umbriventer* Miller. Adult female; Cat. No. 162612.
Right. *Saccostomus mearnsi* Heller. Adult male; Cat. No. 162882.
(From Smithsonian Misc. Coll., vol. 54, No. 1925, pl. 1. 1910.)

PLATE 33.

Skulls of type-specimens (natural size).

Left. *Pelomys roosevelti* Heller. Adult male; Cat. No. 162881. (=*Mylomys roosevelti.*)
Right. *Dasymys helukus* Heller. Adult male; Cat. No. 162889.
(From Smithsonian Misc. Coll., vol. 54, No. 1924, pl. 1. 1910.)

PLATE 34.

Skulls of type-specimens (natural size).

Upper figures. *Dasymys savannus* Heller. Adult female; Cat. No. 164471. (=*Dasymys helukus savannus.*)
Middle figures. *Dasymys helukus nigridius* Hollister. Adult female; Cat. No. 162465.
Lower figures. *Dasymys orthos* Heller. Adult male; Cat. No. 164824.

PLATE 35.

Skulls of type-specimens (natural size).

Upper figures. *Pelomys fallax iridescens* Heller. Adult male; Cat. No. 181801.
Middle figures. *Arvicanthis jebelæ* Heller. Adult male; Cat. No. 164826. (=*Arvicanthis testicularis jebelæ.*)
Lower figures. *Arvicanthis abyssinicus centrosus* Hollister. Adult male; Cat. No. 165167.

PLATE 36.

Skulls of type-specimens (natural size).

Upper figures. *Lemniscomys pulchellus spermophilus* Heller. Adult female; Cat. No. 181800. (=*Lemniscomys striatus massaicus.*)
Middle figures. *Arvicanthis pulchellus micropus* Heller. Adult female; Cat. No 164825. (=*Lemniscomys striatus massaicus.*)
Lower figures. *Arvicanthis abyssinicus virescens* Heller. Adult male; Cat. No. 183922.

PLATE 37.

Skulls of type-specimens (natural size).

Upper figures. *Eliomys parvus* True. Adult female; Cat. No. 36056. (=*Graphiurus parvus.*)
Middle figures. *Graphiurus murinus johnstoni* Heller. Adult male; Cat. No. 181787. (=*Graphiurus murinus griseus.*)
Lower figures. *Otomys orestes dollmani* Heller. Adult male; Cat. No. 181790. (=*Otomys dollmani.*)

PLATE 38.

Skulls of type-specimens (natural size).

Upper figures. *Graphiurus personatus* Heller. Adult female; Cat. No. 164827.
Lower figures. *Georychus kapiti* Heller. Adult female; Cat. No. 161708. (=*Heliophobius kapiti.*)

PLATES 39–40.

Skull of type-specimen of *Pedetes surdaster currax* Hollister. Adult male; Cat. No. 181762. Natural size.

PLATE 41.

Skull of type-specimen of *Thryonomys gregorianus pusillus* Heller. Young adult female; Cat. No. 181807. Natural size. (=*Thryonomys pusillus.*)

PLATE 42.

Skull of type-specimen of *Lepus raineyi* Heller. Adult female; Cat. No. 181808. Natural size.

PLATE 43.

Skull of type-specimen of *Lepus capensis abbotti* Hollister. Adult female; Cat. No. 34779 (skin No. 19014). Natural size.

PLATE 44.

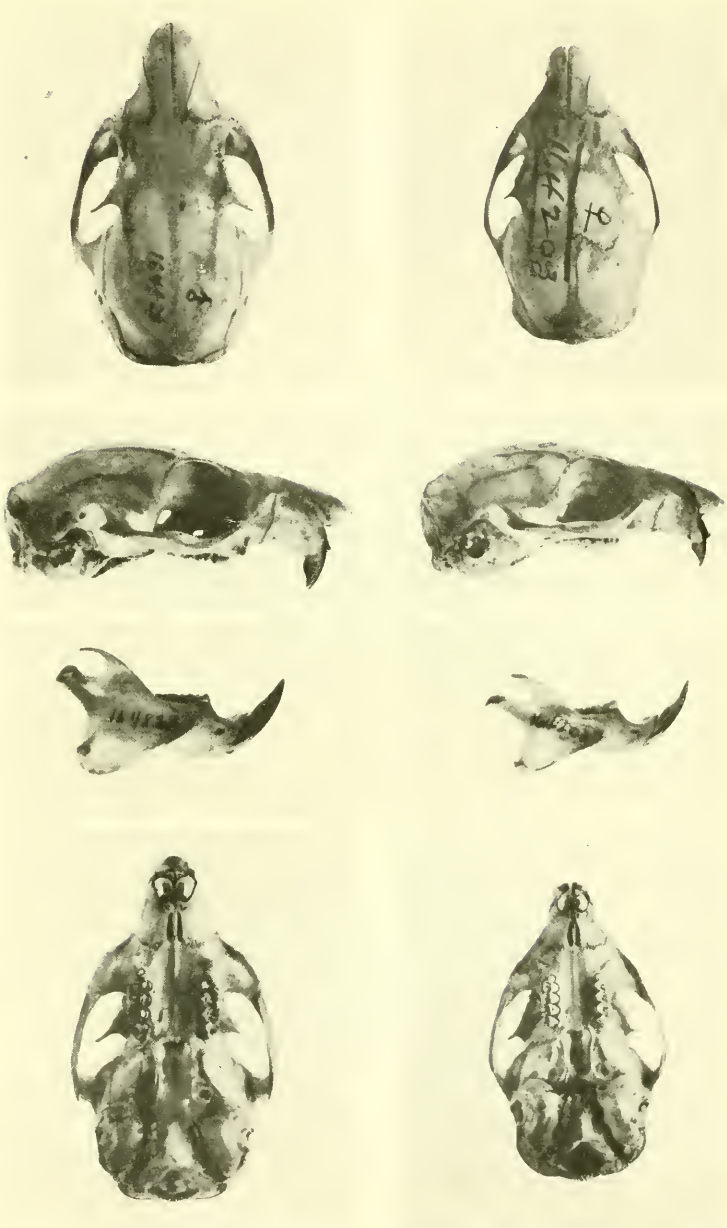
Skull of type-specimen of *Lepus kakumegæ* Heller. Adult female; Cat. No. 181809. Natural size. (=*Lepus victoriæ kakumegæ.*)

HELIOSCIURUS UNDULATUS (TRUE). TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 172.

HELIOSCIURUS UNDULATUS SHINDI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 172.



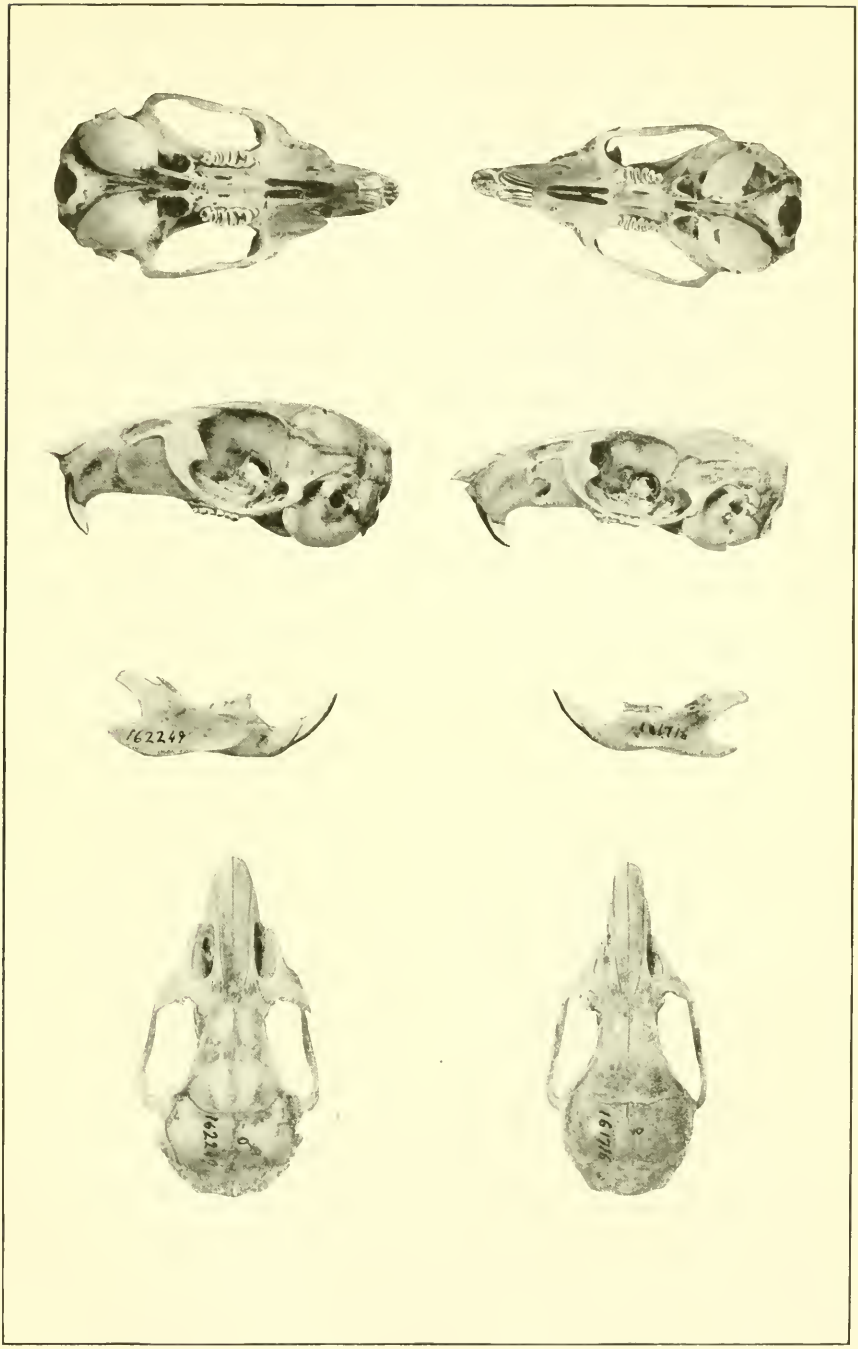
HELIOSCIURUS MULTICOLOR MADOGAE HELLER. TYPE.

PARAXERUS OCHRACEUS KAHARI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 172.

PROTOXERUS STANGERI BEA HELLER. TYPE.

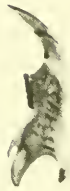
FOR EXPLANATION OF PLATE SEE PAGE 172.

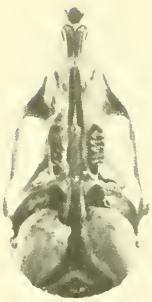


TATERA BÖHMI VARIA HELLER.
TYPE.

TATERA VICINA POTHAE HELLER.
TYPE.

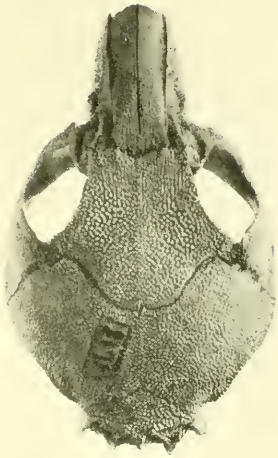
FOR EXPLANATION OF PLATE SEE PAGE 172.

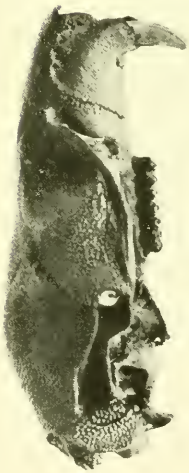




TATERA NIGRICAUDA PERCIVALI HELLER. TYPE.

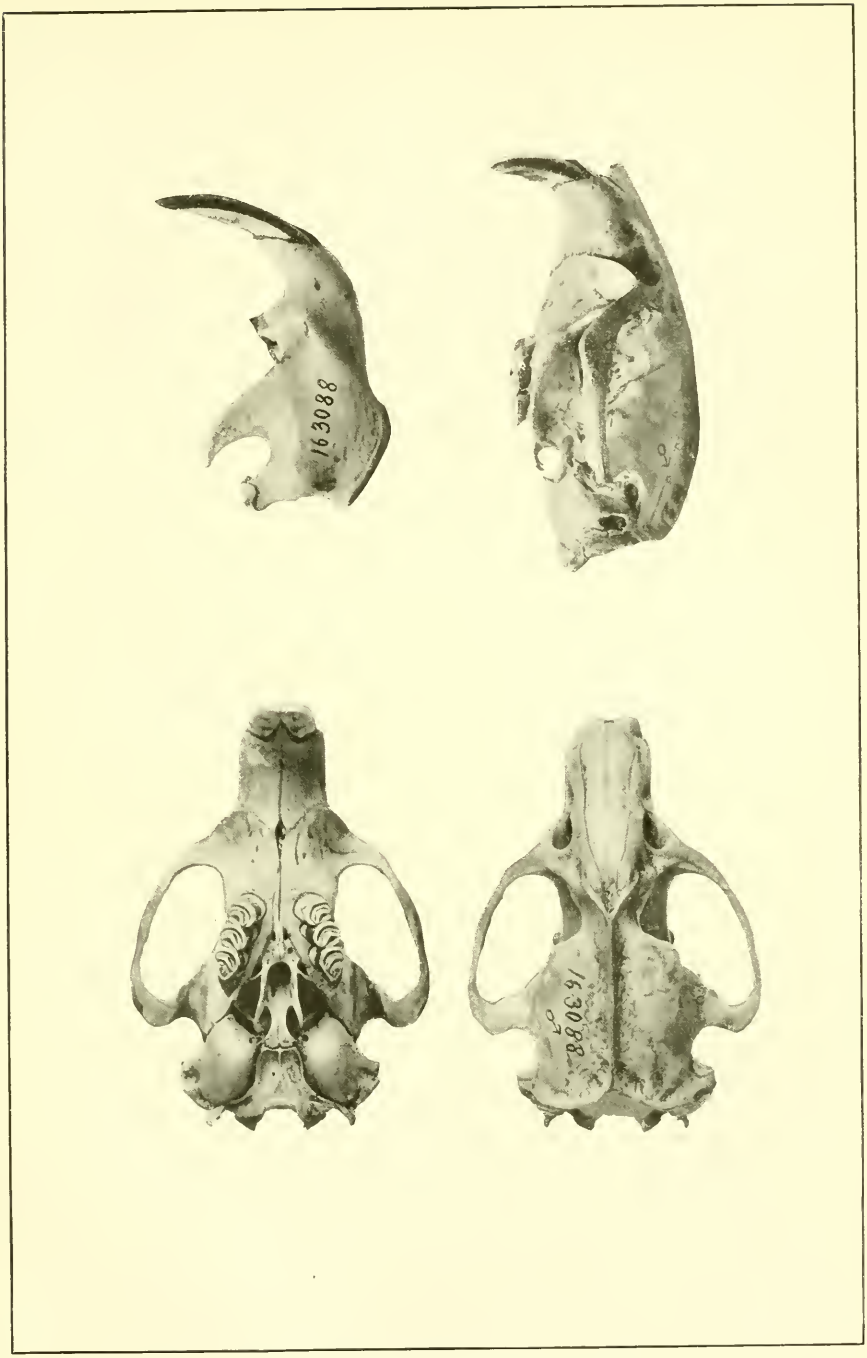
FOR EXPLANATION OF PLATE SEE PAGE 172.





LOPHIOMYS THOMASI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 172.



TACHYORYCTES REX HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 172.

DENDROMUS INSIGNIS PERCIVALI HELLER. TYPE.

DENDROMUS WHYTEI CAPITIS HELLER. TYPE.

DENDROMUS LINEATUS HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 172.

DENDROMUS NIGRIFRONS TRUE. TYPE.

DENDROMUS NIGRIFRONS SPECTABILIS HELLER. TYPE.

STEATOMYS ATHI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 172.

ZELOTOMYS HILDEGARDEAE VINACEUS HELLER. TYPE.

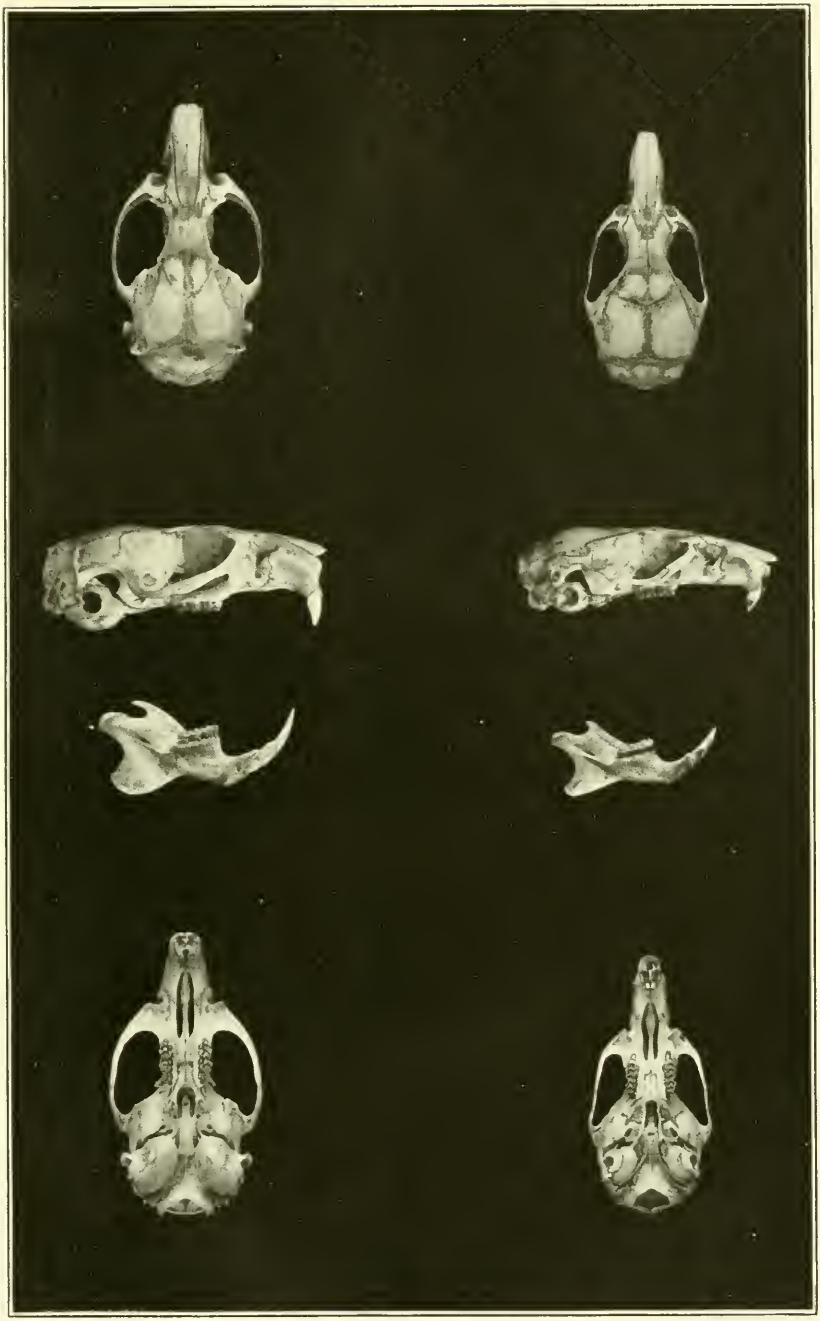
THAMNOMYS SURDASTER LITTORALIS HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 172.

OENOMYS BACCHANTE VALLICOLA HELLER. TYPE.

RATTUSK AISERI HELLERI HOLLISTER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 173



RATTUS NIGRICAUDA LORINGI (HELLER). TYPE.

RATTUS TULLBERGI PEROMYSCUS (HELLER). TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 173.

RATTUS KAISERI TURNERI (HELLER). TYPE.

EPIMYS ENDOROBAE HELLER. TYPE.

RATTUS TAITAE (HELLER). TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 173.

RATTUS STELLA KAIMOSAE (HELLER). TYPE.

EPIMYS NIVEIVENTRIS ULAE HELLER. TYPE.

RATTUS TANA (TRUE). TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 173

RATTUS COUCHA ISMAILIAE (HELLER). TYPE.

RATTUS COUCHA TINCTUS HOLLISTER. TYPE.

RATTUS COUCHA NEUMANI (HELLER). TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 173.

LEGGADA NAIVASHAE HELLER. TYPE.

RATTUS COUCHA PANYA (HELLER). TYPE.

RATTUS COUCHA CURUMAE (HELLER). TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 173

MUS EMESI HELLER. TYPE.

MUS BELLUS ENCLAVAE HELLER. TYPE.

MUS BELLUS GONDOKORAE HELLER. TYPE.

MUS BELLUS PETILUS HOLLISTER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 173

MUS GRATUS SUNGARAE HELLER. TYPE.

MUS GRATUS SORICOIDES HELLER. TYPE.

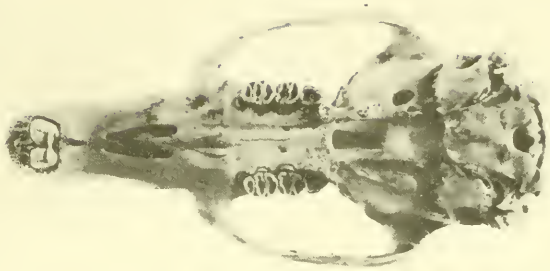
MUS TENELLUS ACHOLI HELLER. TYPE.

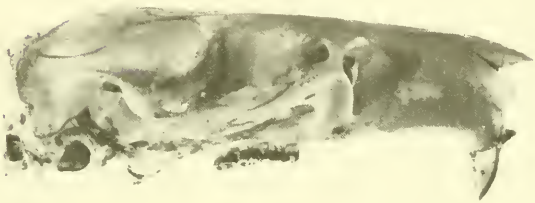
MUS WAMAE HELLER. TYPE.

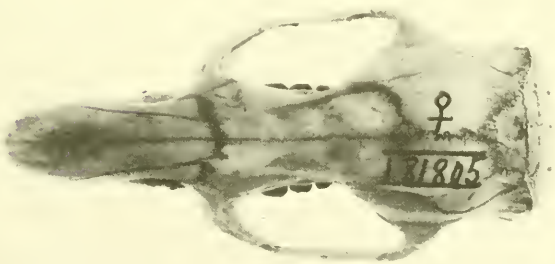
FOR EXPLANATION OF PLATE SEE PAGE 174.

CRICETOMYS GAMBIANUS RAINEYI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 174.







CRICETOMYS GAMBIANUS ENGUVI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 174

CRICETOMYS GAMBIANUS OSGOODI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 174.

LOPHUROMYS AQUILUS (TRUE). TYPE.

LOPHUROMYS ANSORGEI PYRRHUS HELLER. TYPE.

LOPHUROMYS AQUILUS MARGARETTAE HELLER. TYPE.

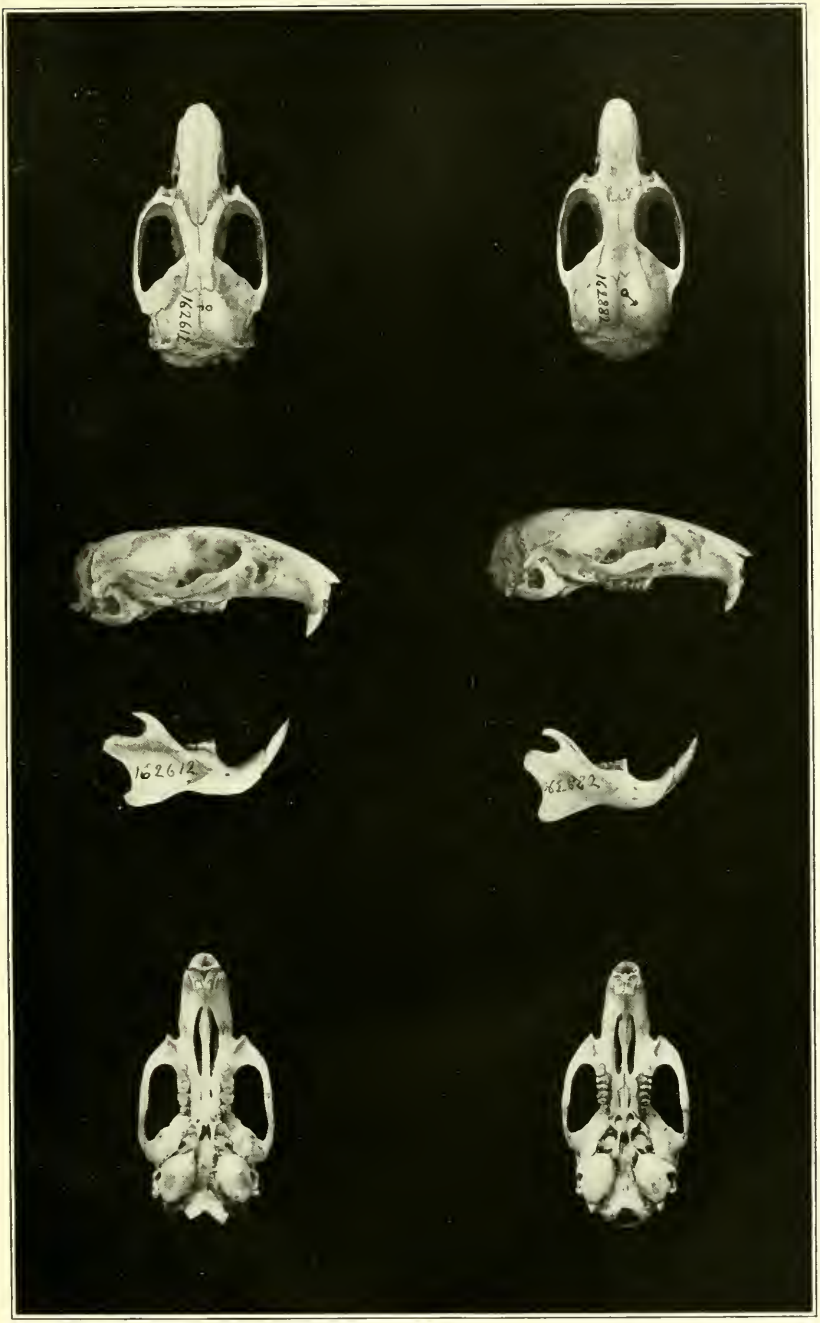
FOR EXPLANATION OF PLATE SEE PAGE 174.

ACOMYS HYSTRELLA HELLER. TYPE.

URANOMYS UGANDAE HELLER. TYPE.

SACCOSTOMUS ISIOLAE HELLER. TYPE.

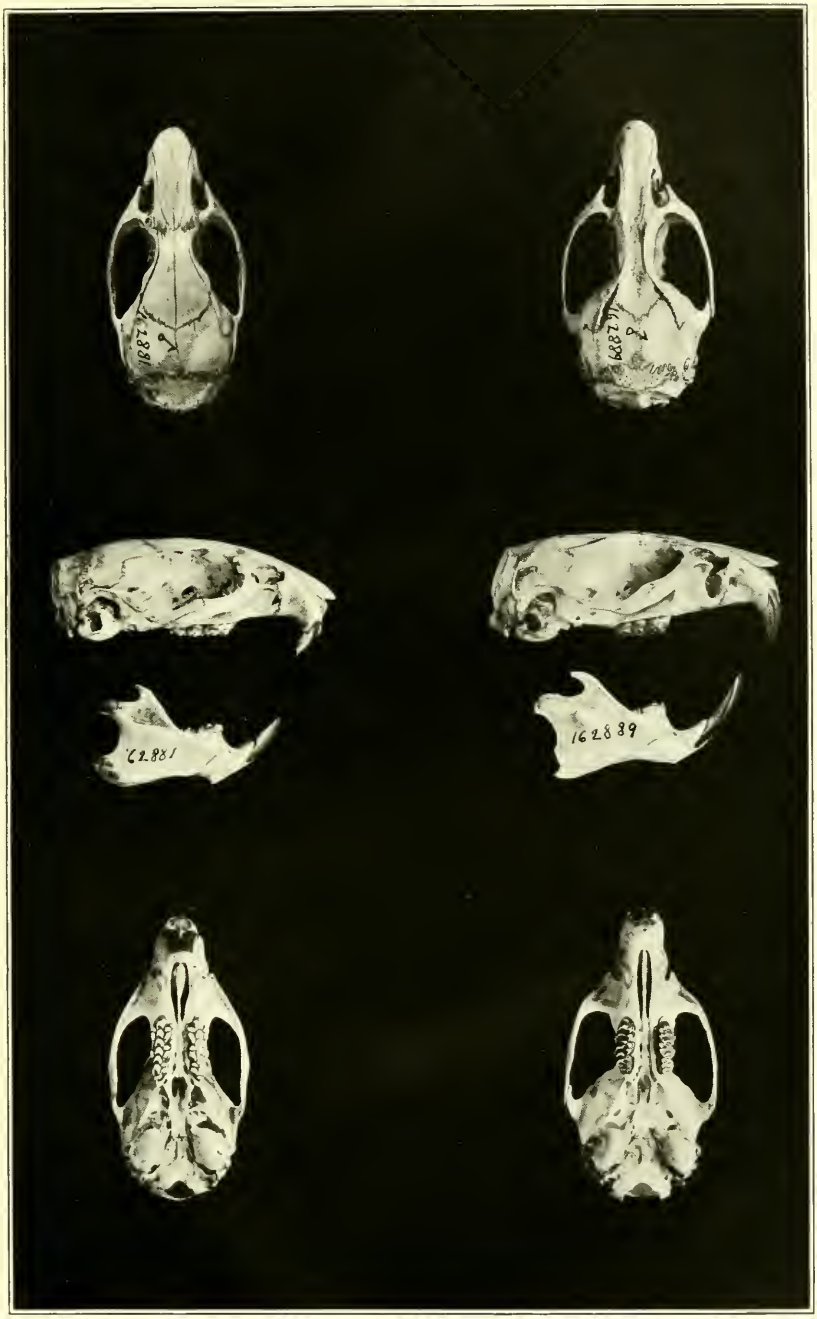
FOR EXPLANATION OF PLATE SEE PAGE 174.



SACCOSTOMUS UMBRIVENTER MILLER.
TYPE.

SACCOSTOMUS MEARNSI HELLER.
TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 174.



MYLOMYS ROOSEVELTI (HELLER). TYPE.

DASYMYS HELUKUS HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 174.

DASYMYS HELUKUS SAVANNUS HELLER. TYPE.

DASYMYS HELUKUS NIGRIDIUS HOLLISTER. TYPE.

DASYMYS ORTHOS HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 174.

PELOMYS FALLAX IRIDESCENS HELLER. TYPE.

ARVICANTHIS TESTICULARIS JEBELAE HELLER. TYPE.

ARVICANTHIS ABYSSINICUS CENTROSUS HOLLISTER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175.

LEMNISCOMYS PULCHELLUS SPERMOPHILUS HELLER. TYPE.

ARVICANTHIS PULCHELLUS MICROPUS HELLER. TYPE.

ARVICANTHIS ABYSSINICUS VIRESCENS HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175.

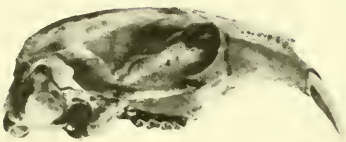
GRAPHIURUS PARVUS (TRUE). TYPE.

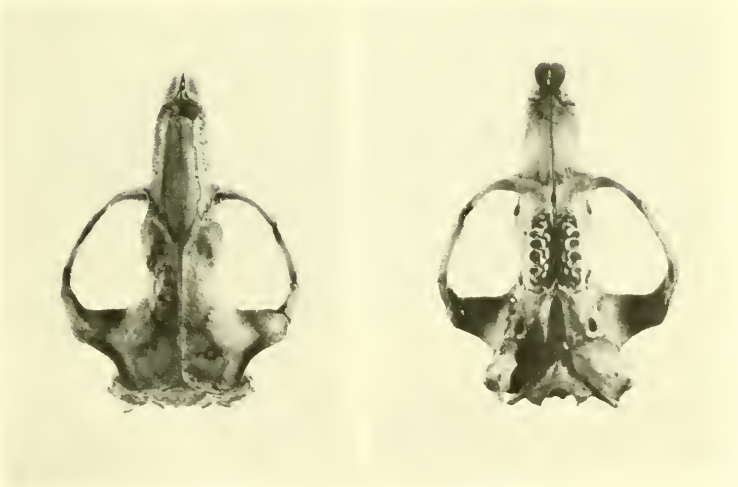
GRAPHIURUS MURINUS JOHNSTONI HELLER. TYPE.

OTOMYS DOLLMANI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175.

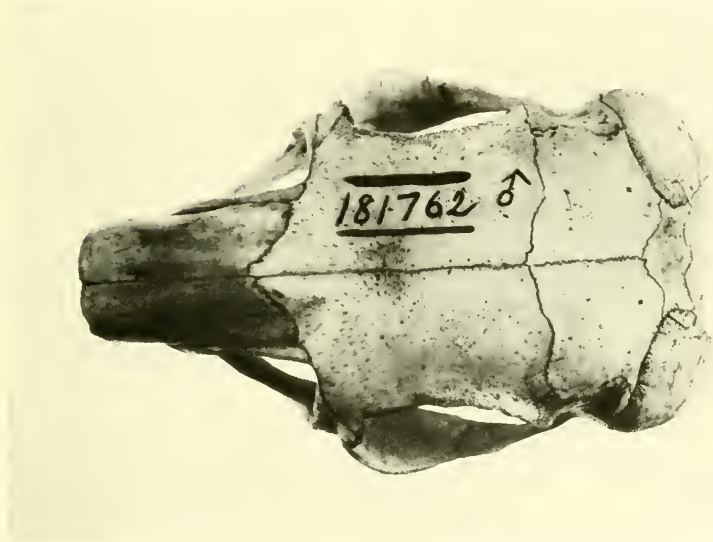
GRAPHIURUS PERSONATUS HELLER. TYPE.





HELIOPHOBIUS KAPITI (HELLER). TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175

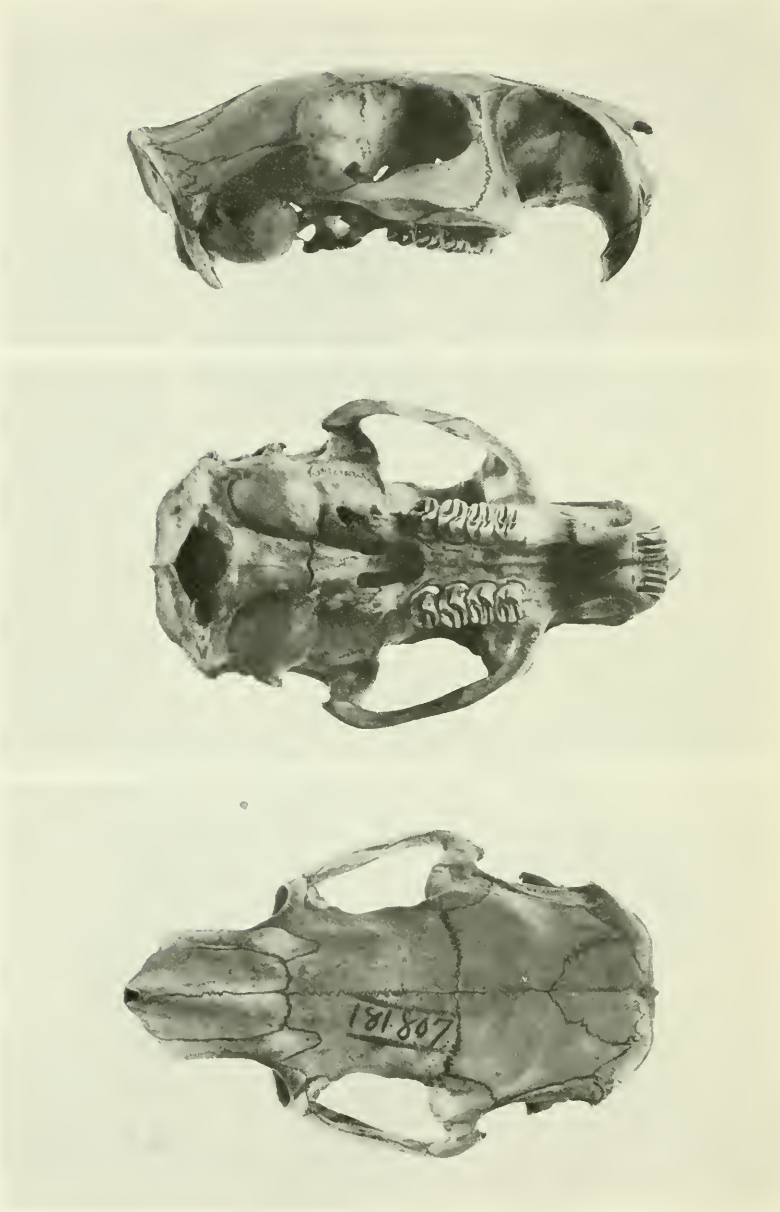


PEDETES SURDASTER CURRAX HOLLISTER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175.

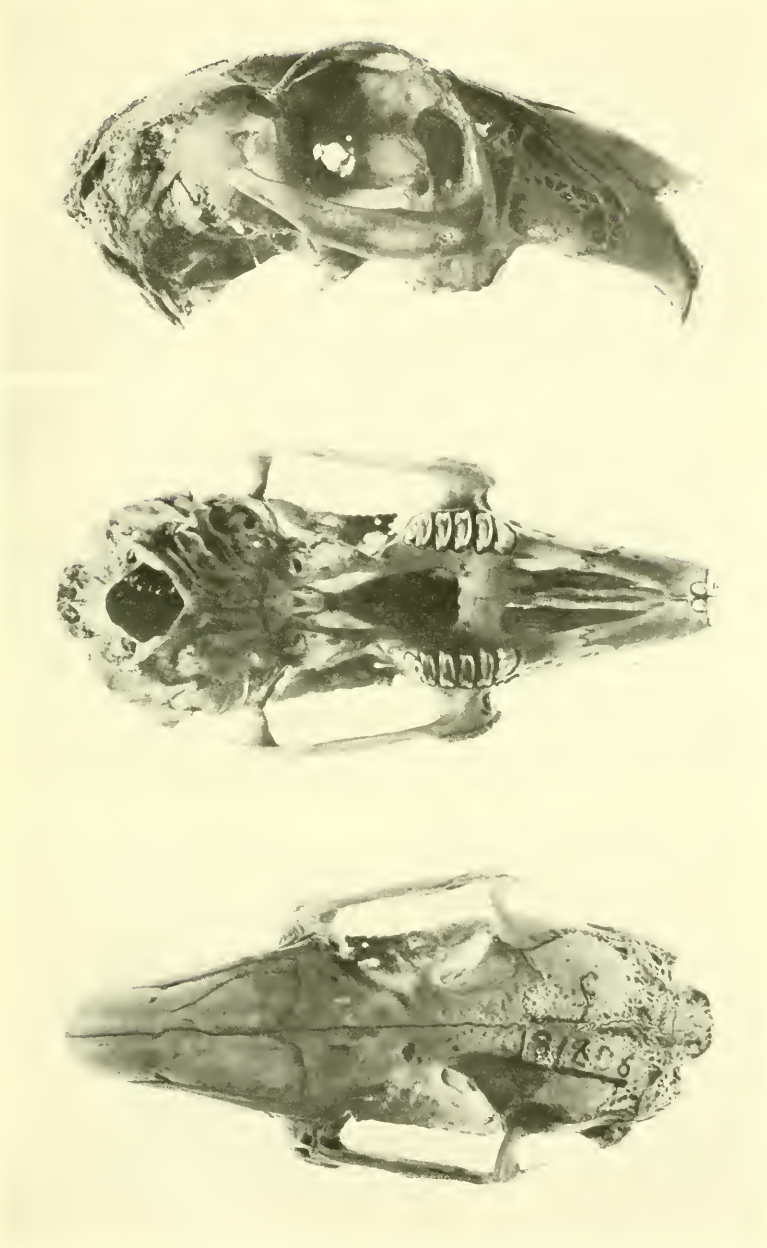
PEDETES SURDASTER CURRAX HOLLISTER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175.



THRYONOMYS PUSILLUS HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175.

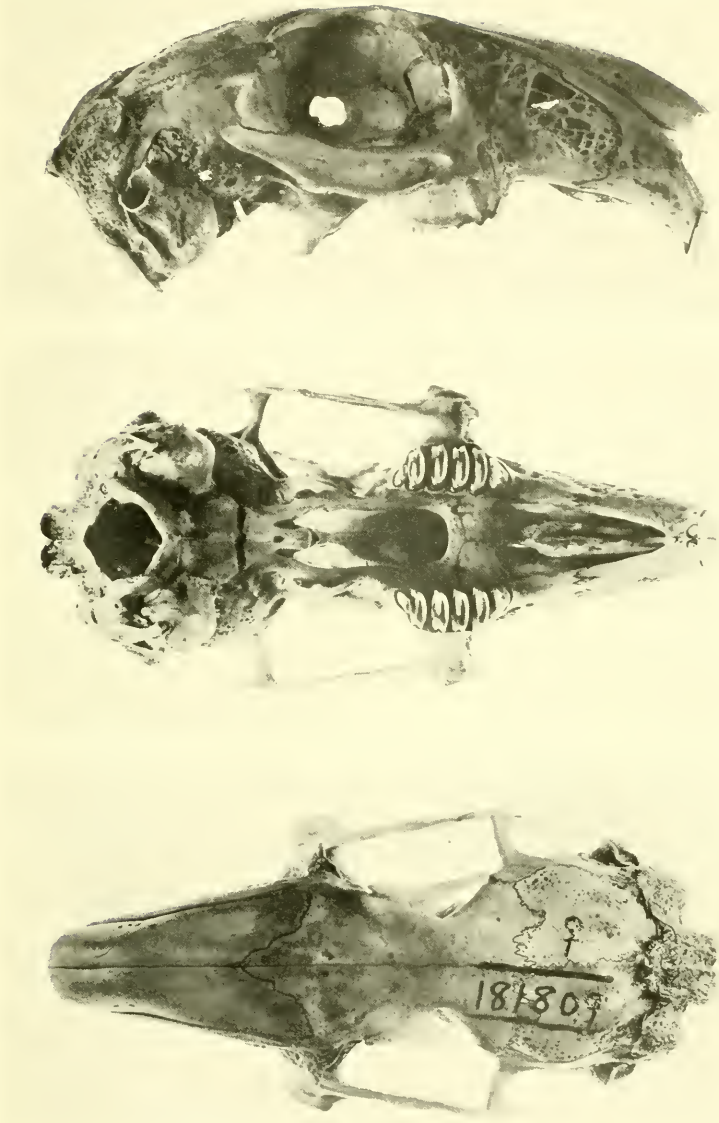


LEPUS RAINEYI HELLER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175.

LEPUS CAPENSIS ABBOTTI HOLLISTER. TYPE.

FOR EXPLANATION OF PLATE SEE PAGE 175.



LEPUS VICTORIAE KAKUMEGAE HELLER. TYPE.

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